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WORLDWIDE REPORT
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REPORTAGE ON IMCO, PMAEA MEETINGS

Anti-Marine Pollution Measures

Victoria NATION in English 26 Nov 79 p 1

[Text] Anti-marine pollution measures, including the Seychelles-inspired Indian Ocean campaign on the subject which is expected to be launched internationally in the not too distant future, were among the many issues discussed at the 11th Congress of the Inter-Governmental Maritime Consultative Organisation (IMCO) in London from which the Principal Secretary for Transport and Tourism, Captain James Ferrari, recently returned.

Discussing the meeting of this 112--member, United Nations affiliate which is based in the British capital, Captain Ferrari explained that the prevention of marine pollution had always been a preoccupation of IMCO, especially with regard to the thousands of tons of oil that were either jettisoned or pumped into the sea by ships every year.

The Congress discussed ways of combatting this threat, including the possibility of cooperative action by countries in an area where pollution had been caused by an accident at sea and in combatting oil slicks.

The issue was naturally important to all countries with fishing and tourism industries and in the case of the Indian Ocean this included practically all the countries of the region.

However, Seychelles had special reasons for grave concern, continued Captain Ferrari, by virtue of its isolated position in the path of the sea lane used by the giant oil tankers travelling from the Persian Gulf to Europe via the Cape of Good Hope and, in the event of an oil slick, the adverse direction of winds and currents.

The two-week IMCO (Congress, which is held once every two years, also discussed various other financial and technical issues including problems of navigation and safety at sea, the system of financial contributions by members--here Captain Ferrari was glad to point out that Seychelles had regularly paid all its dues to the organisation, IMCO programme of action for the next two years and the body's relations with other international organisations and agencies.

This was the first that Seychelles had been represented at an IMCO Congress as an independent country and Captain Ferrari was also accompanied by Captain Houreau of the Department of Port.

[photo caption:]

Two foreign fishing vessels aground on our reefs. Should this, or a collision, happen to a supertanker, the effects on our marine life and beaches would be disastrous.

Seychelles Campaign

Victoria NATION in English 27 Nov 79 pp 1,2

[Text] The Seychelles' Indian Ocean anti-marine pollution campaign is finally being launched this week during the five-day Seventh Council Meeting of the Port Management Association of Eastern Africa.

The announcement was made yesterday morning at the meeting's venue, the Reef Hotel at Anse aux Pins, by the Minister for Transport and Tourism, Mr Matthew Servina during the official opening ceremony.

Addressing some 35 participants from eight countries of the region and several international bodies, the Minister said, "I am pleased to announce that the Government of Seychelles has chosen the occasion of your meeting to launch a campaign for the prevention and control of marine pollution in the Indian Ocean." He then revealed also that the Governments of Kenya and Malagasy Republic had already committed their support to and participation in the campaign and appealed to other countries in the region and those national and international organisations which were in a position to help to do likewise.

After expressing Government's gratitude to the Inter-Governmental Maritime Consultative Organisation (IMCO) for its invaluable assistance in preparing the campaign, Minister Servina reminded participants "that developing countries such as ours should not wait for outside organisations to initiate such activities on our behalf..." and that we should get together to make the first attempts.

At the beginning of his opening speech Mr Servina said that the meeting was taking place at a time when our region was beset with many complex problems, in spite of which our countries remained very dependent on maritime traffic and communication in order to ensure our survival and development and, in the specific case of Seychelles, the development of all our islands.

Leading up to the announcement of the launching of the anti-marine pollution campaign, the Minister said that Seychelles believed that the countries of the Indian Ocean and the littoral states were already being threatened by the danger of this type of pollution."

"It is high time that all countries in this region become concerned and take measures to prevent the situation from becoming worse," the Minister said before adding that due to the region's limited and scattered resources the only way for it to succeed was for all to pull in unison.

The Minister also referred to the issue of the training of personnel required in port management which was to be discussed during the meeting, and informed participants that he had already discussed the subject at length with representatives of the United Nations Development Programme (UNDP) and that they were willing to assist significantly with any regional training programme should the countries of the region make a collective approach to the agency.

Starting off the opening ceremony prior to Minister Servina's address, Mr P. K. Kinyanjui of Kenya, the chairman of the meeting and of the Association, thanked the Government of Seychelles for hosting the meeting.

He explained that the Association, formed seven years ago, was aimed at primarily developing and fostering coordination and cooperation among the ports and harbours in the Eastern African region with a view to increasing their efficiency in port operation and management.

Mr Kinyanjui then said that the current meeting was for the member states to cooperate in solving the existing problems and deficiencies in port management.

The participants' programme includes the discussion of several papers and a visit to the New Port.

Delegates come from the member states of Kenya, Tanzania, Ethiopia, Somalia, Mozambique, Madagascar and Sudan, as well as Seychelles, and from IMCO, UNDP, the Economic Commission for Africa (ECA), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Environmental Programme (UNEP), Water Craft Ltd and Management Consultants of Holland.

Formal Introduction of Campaign

Victoria NATION in English 30 Nov 79 p 2

[Text] Seychelles' most important contribution to the Seventh Council Meeting of the Port Management Association of East Africa currently taking place at the Reef Hotel under the auspices of the Ministry of Transport and Tourism, and to the retention of the region's seas as one of the cleanest expanses of ocean in the world will be officially launched this morning.

The Seychelles-inspired and Inter-governmental Maritime Consultative Organisation (IMCO)-backed Indian Ocean anti-marine pollution campaign is to be formally introduced to the P.M.A.E.A. meeting through papers on marine pollution. These will be put forward by Commander Hayes of IMCO and

Mr Hassan Gudal of the United Nations Environmental Programme (UNEP), which is also involved in the campaign, during the morning session.

The campaign was initiated following concerned approaches by the Seychelles Government, for assistance in the planning stages, to IMCO, a United Nations affiliate body of 112 members and based in London, which had, as one of its primary concerns, the prevention and control of marine pollution, particularly by ships, worldwide.

Presented with an opportunity to be actively involved in concrete and positive action in this sphere, IMCO responded by sending two representatives to Seychelles as the preparations and preliminary studies for the campaign got under way. The two IMCO officials were handed examples of the tar-like substance often found washed up on our beaches which laboratory analyses showed to be jettisoned waste from passing oil tankers plying between Europe and the Persian Gulf via the Cape of Good Hope.

Last October, during an overseas trip, the Minister for Transport and Tourism, Mr Matthew Servina, called at the headquarters of IMCO in London for final talks prior to the launching of the campaign.

In an airport interview on his return to Seychelles, the Minister explained that marine pollution, if unchecked, constituted a grave danger to our seas both as a vital tourist attraction and as the mainstay of our growing and extremely crucial (to our economic development, aim for self sufficiency in food and struggle for economic independence) fishing industry.

Some two weeks later, Captain James Ferrari, the Principal Secretary for transport and tourism returned from the 11th Congress of IMCO in London to announce that anti-marine pollution measures, including the impending Indian Ocean campaign, had been one of the main items on the Convention's Agenda. Different ways of combatting this threat had been discussed including the cooperation of neighbouring states in instances where a pollution disaster arose.

It was this sort of cooperation that Minister Servina called for when opening the P.M.A.E.A. meeting on Monday.

Addressing some 35 participants from eight of the Association's member states and from several international bodies, including IMCO and UNEP, the Transport Minister announced that the campaign would finally be launched during the meeting and revealed that already the Governments of the Malagasy Republic and Kenya had promised their support and participation.

Calling on the other states of the region and on those national and international organisations in a position to help to lend a hand, Mr Servina stated: "It is high time that all countries in this region become concerned and take measures to prevent the situation of marine pollution from becoming worse." Due to the region's limited and scattered resources that were available to combat this threat, the only way to success was through unison, he reasoned.

Meanwhile, the meeting, which will close this afternoon, has continued discussing several papers put to it since Monday and among those read and discussed yesterday morning was one on the training of personnel.

CSO: 5000

WEST JAVA COASTAL ENVIRONMENT DAMAGED BY EROSION

Jakarta KOMPAS in Indonesian 9 Nov 79 pp 1, 6

[Article: "Extremely Critical And Disturbing"]

[Excerpt] The level of damage to the environment in the West Java region has already reached the extremely critical and disturbing point. Minister of State for Development and Environment Control Dr Emil Salim said this in a speech to students of the University of Parahiyanagan (Unpar) on 8 November on the Unpar campus at Ciumbeluit, Bandung.

According to Emil the coast and waters of West Java are no longer what they were a short time ago. The minister said that there are practically no mangrove trees or other trees which grow in briney water now thriving on the West Java coast. Also the waters along the northern coast of West Java are no longer blue, but rather turbid and muddy as a result of erosion taking place in the interior.

Fishermen have to go out to sea a great distance to find fish, as it is difficult to find sea fauna along the coast.

According to the minister, the alarming state of the environment of West Java is due mainly to its dense population. It is the mostly densely populated part of Java and its people make their living by exploiting natural resources and so have caused the damage. The uncontrolled cutting of the forests has caused erosion which in turn has produced floods and other natural disasters.

According to Emil, the city of Bandung with a population density of 15,000 people per hectare faces the basic problem of trash disposal which must be quickly solved. Both the public as well as the regional government must help.

According to the minister, the problem is where can the trash from the markets and homes be taken. The minister hopes that in solving the trash problem, the public will take an active part, especially in guarding against trash being thrown into the rivers.

7785

CSO: 5000

WATER QUALITY FOUND BELOW ENVIRONMENTAL CONTROL STANDARD

Tokyo KYODO in English no time given 13 Dec 79 OW

[Text] Tokyo, 13 Dec KYODO--The water quality of 60 per cent of rivers, swamps and sea areas throughout the country was below the environmental control standard in fiscal 1978, an environment agency survey said Thursday.

This means the water systems have remained polluted for the past few years.

The survey showed that 61.7 per cent of the water sampled from 2,814 rivers, swamps and sea areas across the country met the permissible loads of biochemical oxygen demand (BOD) and chemical oxygen demand (COD).

More precisely, 59.5 per cent of river water, 37.6 per cent of seawater and 75.3 per cent of swamp water exceeded the tolerance.

This indicates the pollution of swamp water was markedly high.

The average achievement rate of BOD and COD loads was 54.9 per cent in fiscal 1974, 59.6 per cent in fiscal 1975, 60.6 per cent and 6.12 per cent in fiscal 1977.

Quantities of organic phosphate and alkyl mercury were within tolerable levels.

But, cyanide, a substance strictly controlled, was detected in the water of the Ayase River in Saitama Prefecture and in the Hirano River in Osaka.

Polychlorinated bihephyls (PCB) were also found in a river in Amagasaki, Hogo Prefecture.

In addition, 21.2 per cent of water samples from the rivers checked, 35.6 per cent of those from the swamps and 17.5 per cent of those from the sea were not fit for household use. The corresponding rates in fiscal 1977 were 20 per cent, 34.7 per cent and 17.6 per cent, respectively.

After the rather poor showing, the environment agency will instruct local governments Friday to take steps to improve the water quality in closed water systems and rivers in urban areas.

CSO: 5000

ENVIRONMENTAL AGENCY TO CONTROL AUTOMOBILE NOISE

Tokyo KYODO in English no time given 10 Dec 79 OW

[Text] Tokyo, 10 Dec KYODO--The specific environmental standard for noise was met at only 17 per cent of the monitoring stations in the country in 1978 with vehicular noise proving a serious nuisance to many local residents, an Environment Agency survey revealed Monday.

The achievement rate for noise control for 1978 was thus lower than the 21.3 per cent for 1976 and 17.6 per cent for 1977.

The figure was obtained in a survey conducted by the agency taking in 3,315 monitoring stations across the country considered to be most affected by vehicle noise.

The noise control standard ranges from 45 phons to 60 phons according to regions and time periods.

The survey showed that the permissible level was being met at 565 of all the noise-checking places, or 17 per cent.

The night-time noise level was found beyond the tolerance level at more than half of the monitoring stations, it said.

The noise intensity at 22.5 per cent, or 746 check-points, exceeded the critical level, at which headmen of local governments are empowered to order traffic control to prevent the vehicular noise from annoying local residents.

Regionwise, the environmental standard was met at 21 per cent of exclusively residential areas, 5.3 per cent of general residential areas, 27 per cent of residential areas combined with commercial and industrial sections, and 37 per cent of industrial areas.

This indicated that general households were most affected by the noise of cars.

The highest noise level of 88 phons was registered at evening at Higashiune, located near National Highway No 2 in Hyogo Prefecture. The noise level there was 86 phons-- 32 phons greater than the legal allowance level even at night.

Nearby residents were in a situation similar to being in a noisy factory, the agency noted.

Residents around Loop Highway No 43 in Tokyo, and National Highway No 1 at Ashiya and National Highway No 43 at Nishinomiya, both in Hyogo Prefecture, also remained afflicted by the automotive noise, it said.

The environment agency is taking steps to control automobile noise at major highways throughout the country by restricting traffic and other means.

CSO: 5000

NUCLEAR WASTE SAFELY DISPOSABLE

Prague ZEMEDEL'SKE NOVINY in Czech 10 Nov 79 p 3

[Article by Jan Subert: "Do Not Be Afraid of 'Nuclear Waste'"]

[Text] In the two previous articles published in this periodical on 20 and 27 October 1979 we dealt with the concept and safety of nuclear power engineering. Continuing in this series of articles, we want to pay attention today to the problem of processing and storage of radioactive waste. As we have already reported before, it is beyond any doubt that the operation of nuclear power plants is much safer than any industrial activity. This was realized even by the most obstinate opponents of nuclear energy who now raise their most frequent objections from different positions. The target of their attack is the sensitive area of disposal of radioactive waste. It cannot be denied that it has seemed for a very long time that this delicate problem could indeed hinder the large-scale development of nuclear power engineering. We can say now, however, that an acceptable solution has finally been found.

Let us begin from the beginning by giving a reply to the question what happens, when--as the experts say--the uranium fuel element in the reactor of the nuclear power plant "burns out." The hot fuel element is, under very strict safety precautions, lifted and submerged in the water reservoir, where its temperature and radioactivity significantly drops after a certain time. As soon as this happens, the element is put into a special railroad container and shipped to the plant for processing of burned fuel.

Its transportation is governed by a number of strict international rules and we can seriously declare that from the technical standpoint it is completely safe. These burned out elements have been transported in many countries of the world already for more than 20 years and quite logically some minor traffic accidents have taken place during such a long time. None of these accidents, however, resulted in a disaster in which radioactivity would have escaped into the environment. According to the estimates, this could happen only once per million shipments.

Let us now have a look at the plant which will process burned fuel. Its construction is by no means simple and represents an investment of more than one billion dollars. If its operation is to be economical, it must process five tons of burned fuel every day or 1,500 tons per year. This, of course, is a quantity which represents fuel from the nuclear power plants with the total output of 50,000 MW which is not anticipated for our country even by the year 2000. The burned fuel elements from our power plants will therefore be taken care of by the Soviet Union, which will offer similar service to all other CEMA countries within the framework of international nuclear cooperation of socialist countries.

During the chemical processing, the fuel elements will get rid of fission products which have the highest radioactivity and constitute unusable "nuclear waste." In the course of this process, plutonium will be separated (approximately 7 kilograms per ton of uranium) which is planned to be used as fuel for the future fast reactors. Purified fuel will then be enriched again and as regenerated in the form of new elements will be shipped back to be reused in the reactors of nuclear power plants.

What to do, however, with radioactive waste mentioned above?

The disposal of low level and intermediate level waste is rigorously controlled both abroad and in our country. We have progressed in the respective area of science and technology so far that this waste can be disposed of in a safe and economically acceptable way. Low level and intermediate level waste which has the form of liquid concentrates and sorbents is first reduced in volume. They undergo, for example, the process of cementation or bituminization in the course of which they solidify and then they are put into the barrels with asphalt or into concrete blocks which are placed into the abandoned mines.

In addition to low level and intermediate waste, however, nuclear power plants also produce high level waste whose disposal is technologically more difficult. We do not encounter them, however, in the operation of Czechoslovak nuclear power plants on our territory. They arise only in the reprocessing of deteriorated fuel which--as already pointed out above--will be carried out on our behalf by the Soviet Union.

Almost all most prominent nuclear laboratories in the world have paid and still pay extraordinary attention to the problems of processing and storing of high level waste. The principal condition and the biggest difficulty in this case is the most perfect possible isolation which would make sure that these radioactive substances--their radiation will drop to the sufficiently low level after 1,000 or more years--will not penetrate from the place in which they are deposited through rocks and underground water into the environment for centuries. Let us add in this context that Czechoslovak nuclear research in cooperation with the glass industry participates in this program by search for an appropriate material in which this radioactive

waste could be "wrapped up" before being deposited underground for ever. Promising for example is its vitrification into borosilicate and phosphate glass blocks or synthetic glass blocks similar to basalt.

After many years of strenuous search for the adequate solution in which the specialists from various fields participated, the world experts have agreed that the most acceptable proposal is to store high level waste in the impermeable geological formations.

We need not be afraid that radioactivity in the underground storage would constantly increase as to reach an astronomical value. In the course of time as the amount of high level waste will increase, the intensity of radiation will eventually reach a certain value after which its further increase—due to the radioactive decay—will be offset by the natural decrease and the level of radioactivity will then permanently be in a certain balance.

Among the impermeable geological formations, most promising appears to be the abandoned salt mines, isolated by the impermeable layer of clay, and not yet depleted salt deposits. The presence of salt testifies to the fact that these locations have not been affected by water for millions of years and there is thus a guarantee that it will be so for another hundred of thousands of years in the course of which the radioactivity of nuclear waste deposited there will eventually decline to the acceptably low level. An advantage of these "nuclear burial grounds" also is a good thermal conductivity of salt which provides for safe dispersion of heat produced by a natural decay of radioactive substances.

Notwithstanding numerous expert opinions according to which the "eternal sleep of nuclear waste" in salt burial grounds will indeed be eternal, it has also been suggested that it would be better if we could dispose of this waste by putting it somewhere outside our planet. In this context it is for example not without interest that NASA, authorized by the American Commission for Atomic Energy, began to explore the possibility of shooting high level nuclear waste by rockets into the Sun. For the time being, this project has been postponed due not only to the high cost involved, but primarily to the incalculable risk—one can easily visualize what could happen in case of a mishap in launching the rocket.

The advocates of the "program of salt burial grounds," however, got a convincing argument in support of their proposal recently. Following the detailed analyses, scientists came up with a sensational finding some time ago: due to the high concentration of uranium in the ore, a natural nuclear reactor came into being on the territory of today's Gabon approximately two billion years ago. The radioactive products, because of the favorable formation of unpermeable rocks, have not dispersed to this day. It is beyond any doubt that the modern science and technology will be able to find and verify in all possible respects the geological locations which meet the conditions of environmental protection much better than an accidental natural phenomenon.

MANABI REQUESTS MEASURES TO COMBAT DROUGHT

Quito EL TIEMPO in Spanish 3 Dec 79 p 2

[Text] Portoviejo (AEP)--Due to a grave emergency in the province as a result of the prolonged drought which has affected widespread agricultural areas, and because of the marked reduction in the river flows, much emphasis has been laid on the need for the National Development Council and the Finance Ministry to approve the draft-bill submitted by the Manabi deputies, the Manabi Rehabilitation Center and the Mayor of Manta.

The bill allows the aforesaid Center to receive the budget allocations, as of 1983, necessary for the execution of two important drinking water supply programs in major Manabi province towns.

For Manta

Active elements in Manta, under Mayor Dr Alberto Cantos Pinargote, are seeking approval of the bill, which guarantees financing for the supply, laying of mains and other accessories connected with extending the potable water line from Portoviejo to Manta.

The cost of the project will be 50 million sucres. Advantageous proposals for the institution have been received from private financing sources.

Other Cities

The same project envisages the extension and improvement of drinking water systems built 10 years ago, but which are currently inadequate, for the towns of Bahia de Caraquez, Chone, Manta, Portoviejo, El Carmen and Montecristi, as well as the mains for the potable water system of Poza Honda and the Portoviejo treatment plant.

An investment of 170 million sucres will be required with which to meet the justifiable claims of these towns, which are seriously threatened by rationing of drinking water in view of the harsh drought afflicting the province.

The document which has been prepared also authorizes the Rehabilitation Center to undertake the contracting of foreign loans for the execution of the work, and these loans will be underwritten and guaranteed by the National Government.

It should be noted that as a result of the measures taken by the Manabi representatives before the national congress, as well as by to directors of the Center and the mayor of Manta, the constitutional president of the republic, Dr Jaime Roldos Aguilera, has given the bill his approval, so that it may be carried out as soon as it has a favorable report from the Development Council and the Finance Ministry.

Provincial leaders hope that the heads of these agencies will give priority to the draft-bill so that an immediate solution will be available for the difficulties created by the shortage of drinking water in the major towns of Manabi province.

7129

CSO: 5000

CILSS DEVELOPMENTS, PLANS REVIEWED

London WEST AFRICA in English 3 Dec 79 pp 2233-34

[Text]

IT WAS an optimistic Sir Dawda Jawara who, earlier this month, spoke of his hopes for the future of CILSS (Comite Permanent Inter-états de Lutte contre la Sacheresse dans le Sahel). Speaking in Banjul on his return from what was probably his last tour as chairman, he disclosed that the Islamic Development Bank had not only agreed to pursue feasibility studies in food security in the Sahel but, together with the Islamic Conference, had agreed to send a mission to Ougadougou, the organisation's headquarters, to study possibilities of financing CILSS projects.

These actions are indicative of the growing involvement of Arab states in the development efforts of Sahel countries. It is even likely that the next meeting of the Club des Amis du Sahel will take place in an Arab state, probably Kuwait.

This is a far cry from the day in December, 1977, when Sir Dawda was elected for a two-year term beginning the following month. Then he told the Banjul summit that the Sahel was facing the most serious period in its history. While in the short term it would continue to seek food aid, he said, the long-term objective was to grow enough food for its inhabitants and eventually for export. He spoke of the irony of a region once more than self-sufficient in food now seeking food aid. He emphasised that the solution to the problems of the region "lies in continuation of our efforts to implement the medium and long-term programmes which we have elaborated for the rehabilitation and development of our region," adding that in this way we "can ensure improved living conditions for its (Sahel area) populations, in spite of uncertain rainfall."

The medium and long-term programmes he referred to are contained in the First Generation Programme 1978-82, worked out by the Club du Sahel at a cost of US\$3bn. The programme covers projects ranging from self-sufficiency in food stuffs, afforestation, feeder roads, storage facilities and livestock development to training, research, exploitation of water resources and the construction of dams. In it are 500 national and 60 regional projects.

The UNDP, the United Nations Sahel Office, FAO and OIC D are but four of the organisations, along with individual countries, which have played a prominent role in efforts to alleviate the plight of the Sahelians. Sir Dawda called on the richer developed nations to contribute towards these efforts and not to see such contribution as charity but as the obligations of partners.

Today, two years and several missions later, \$1bn. has been committed to projects and \$1.4bn. confidently expected to be available later. The funds were committed following the Amsterdam meeting of the club, which Japan attended for the first time.

The missions took the chairman to North America, Western Europe, the Middle East and Gulf States. Indeed, during these two years, very few of Sir Dawda's overseas tours had to do with exclusively Gambian affairs, prompting the remark "CILSS has taken our president from us".

Since Chad, Mali, Mauritania, Niger, Senegal and Upper Volta established the CILSS at the Ougadougou Convention of 1973, its membership has increased to eight, taking in The Gambia and Cape Verde. It is likely that this number will

increase as Guinea Bissau, Guinea Conakry and Nigeria have expressed interest in joining. The Nigerian interest stems not so much from the organisation being a source of aid as from the fact that development plans, both at national and regional level, are so comprehensive and solutions adopted so meticulously worked out that Nigeria is said to believe that she stands to reap benefits from membership. There is also a political consideration in this for the giant of black Africa. It cannot afford not to be identified with a body so full of potential economically and hence of long-term political significance. Furthermore, membership will be consistent with the objectives of ECOWAS which Nigeria worked hard to set up.

From the onset, self-sufficiency in food crops and excellent communications, particularly in the rural areas, were stressed. Poor road network had meant that the little food produced during the ten years of drought was unable to reach other areas. Moreover, it was difficult, to say the least, to get relief food to the most needy areas. This accounts for the great attention paid to rural development.

Drought is nothing if it is not the absence of rain. And the Sahel is very vulnerable to drought. There is no question of stopping this natural calamity, but there are means of protecting oneself from its consequences. Thus the emphasis on the urgency of exploiting the vast surface and underground water resources. Sir Dawda had said that much benefit could accrue from a rational and integrated development of such water resources as Lakes Chad and Niger and The Gambia and Senegal Rivers. In order to be able to do this, however, large amounts of money would have to be spent. As CILSS countries clearly do not have the money, aid and or grants on a massive scale would have to be obtained.

There are, however, features of aid which have caused no little concern to the organisation. One is the time limit set on the availability of funds. Regardless of the progress made on a project, funds cease to be available as soon as the period expires and a new round of negotiations has then to commence, assuming the donor wishes to continue participation. This means a slowing down of the pace of implementation. There is also the matter of inflation, which more often than not means that the cost of a project has constantly to be revised upwards. In addition, account must be taken of pre-investment studies. These, undoubtedly necessary, are both time-

consuming and expensive. And funding agencies and countries invariably insist on seeing and approving the results of the studies before even considering participation.

Addressing the Peutingen Collegium in Munich in January, 1978, the CILSS chairman urged that the cost of such studies be part of the aid package. He was to return to the subject in addresses to West European and North American audiences in May and the United Nations.

While welcoming aid, Sir Dawda asked that this go hand in hand with trade. In his second address to the Peutingen Collegium, entitled "A New World Economic Order", he noted that mankind today lived in an interdependent world and that economic prosperity cannot be divorced from political stability. Political stability, he said, cannot reasonably be assumed in a situation where the terms of trade were manifestly to the disadvantage of one party. "Liberalism and political democracy in the developed and developing countries can only be maintained on the basis of economic liberalism and social justice through increased co-operation," he said. He went on to say that it is incumbent on the developed nations to use their best endeavours to advance the North-South Dialogue "beyond the stage of concept and translate it into a dynamic, democratic and equitable relationship."

At the same time, the matter of industrialisation, which is directly linked with the training of scientists and technicians, has occupied the attention of CILSS. The vast majority of African countries are primary producers, the price of whose product is determined by the buyers, mostly industrialised nations. As they have no say in the fixing of the price of goods manufactured from their primary products, it is natural that they would want to get out of the "heads I win, tails you lose" predicament they find themselves in. Not surprisingly, they seek to industrialise. To this end, and in order to be actively involved in the search for solutions to the problems of the integrated development of the economies of the region, the Sahel Institute was set up.

CILSS member states are only too aware of the damage done to the environment by the destruction of the forest cover. National energy plans for the period up to the year 2000 are being worked out. In the interim, measures aimed at restoring the ecological balance are being taken. In The Gambia,

indiscriminate felling of trees is forbidden. At the same time, where it is found necessary to fell trees, replacements are planted. There is therefore the annual tree-planting exercise, undertaken on a self-help basis. Inevitably, not all the young trees survive, but the survival rate has not been discouraging.

How confident is the CILSS of achieving its objectives? The organisation appreciates that it would take a long time. But the following comment is indicative of the mood: "With determination and perseverance, we would have laid a solid foundation for coming generations to build on. Drought and natural disasters need not be the pressing problems for those after us as they are for us today." The organisation also realises it cannot go it alone and that it needs the active co-operation and partnership of the developed world so that (to quote Sir Dawda Jawara again) "we will give the world a much-needed example of what the strength of human solidarity can do in any struggle against the obstacles of development."

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WATER LEVELS REPORTED CONTINUING TO DROP

Windhoek WINDHOEK OBSERVER in English 15 Dec 79 p 13

[Text]

WINDHOEK: They keep on running low, for all of them are situated in those regions of South West Africa which were not as fortunate as Tsumeb, Grootfontein and Otavi, to get substantial rains. Windhoek's Goreangab Dam is indeed low, so low that it contains barely three quarters of a million cubic metres. On the other hand, the City of Windhoek has drawn heavily on this dam to conserve other resources.

The latest readings of the major dams are:

- ★ Goreangab at Windhoek 14,8 percent (last year 29,7 percent for the same period), 0,765 million cubic metres;
- ★ Hardap at Mariental 69,3 percent (last year 75,4 percent) 207,928 million cubic metres;
- ★ Naute Dam at Keetmanshoop 44 percent (last year 64,9 percent) 30,53 million cubic metres;
- ★ von Bach 45,3 percent (last year 66,1 percent), 24,18 million cubic metres;
- ★ Swakoppoort 4 percent (6 percent last year) 2,79 million cubic metres;
- ★ Friedenau 40,4 percent (49,9 percent last year) 2,81 million cubic metres;
- ★ Pump Storage at Gobabis 27,3 percent (69,3 percent last year) 0,322 million cubic metres;
- ★ Olushandja 3,8 percent, being one 1,63 million cubic metres. There is not a comparable figure in percentage for last year;
- ★ Avis Dam is empty and so is Daan Viljoen at Gobabis. The dam in the Daan Viljoen Game Reserve is likewise empty.

CSO: 5000

UKRAINE SCIENTISTS WORK FOR CLEAN WATER SUPPLY

Kiev PRAVDA UKRAINY in Russian 14 Nov 79 p 4

[Article by Prof Ye. Goncharuk, head of the department of municipal hygiene of the Kiev Medical Institute: "Water Born Anew"]

[Text] In the republic a system of return water supply is being introduced extensively for the purpose of preventing pollution of bodies of water by industrial waste waters, it was pointed out at the last session of the Ukrainian SSR Supreme Soviet. The capacity of this system, exceeding 40 billion cubic meters per year, will make it possible to conserve whole rivers of pure water. What are the prospects of development of this important direction of the national economy?

The vast spaces of the Ukraine, a republic with a highly-developed industry and densely populated regions, are not rich in water. The saving of water, and its re-use are taking on greater and greater national economic and sanitation and hygiene significance. Water, just as power resources, is an object of daily concern. So the development of theoretical bases of low-waste and waste-free technologies, and the creation of fundamentally new methods of utilization of the wastes of industrial and agricultural production have priority significance.

The Pervomaysk Chemical Plant in the Khar'kov region is an enterprise of today and tomorrow. Here a scheme of production without an outflow has been realized. The water is used in a closed cycle, and the discharges of the Pervomaysk and its enterprises are used for replenishment. Substantiation of modern methods of water purification is an urgent direction of hygiene science. For about 20 years now it has been developed comprehensively in the department of municipal hygiene of the Kiev Medical Institute imeni A. A. Bogomolets.

A water shortage concerns not only industry. It goes right up to the large cities, especially in the south. This has also given rise to the need for tertiary purification of water, in other words, for additional physical-chemical treatment of the waste liquid after its regular biological purification.

What is the essence of the method? Tertiary purification of water recalls the operation of a modern factory with special shops. There is the coagulation, the adsorption and ion-exchange adjustment of the salt composition of the waste waters.

Exceptionally important in the purification is its rather simple and convenient mechanism. The Institute of Colloid Chemistry and Water Chemistry of the Academy of Sciences of the Ukrainian SSR proposed for this a continuous action adsorber. Together with chemist Prof A.M. Kaganovskiy we had to determine the operating regime, and make a sanitary evaluation. For this we used a semi-production model, which carried literally thousands of tons of water. It was necessary first to validate scientifically the requirements for the technology of purification, for the quality of such waters.

Considerable assistance in these studies was given by associates of the department of microbiology of the medical institute, docent V.N. Girin and Prof V.P. Shirobokov, who solved basically important questions of microbiological and virological control over the course of the purification. Studying the regulation of the discharge-free cycle at the Pervonaysk Chemical Plant, Candidate of Medical Sciences O.V. Salat, a representative of the department of municipal hygiene, for the most part proceeded from these new scientific data. Such a combined approach to solution of the problem brought perceptible benefit to the matter.

Depending on where the water goes after tertiary purification, different industrial hygiene schemes are required. One case is the water for discharge-less production cycles, another is for release into bodies of water with a special regime, and the third case is for heat supply systems. However all these are technical grades of water. There are not suitable for consumption. The acute and tempting problem is whether the waste waters can replenish the natural turnover after purification. This question is close to a real solution, and for such "super-purification," quarternary purification, it must be assumed that with the appropriate technology we will approach the natural filters of the soil, those properties of the earth which will make the purified waters natural ground waters. Namely this water, in fact generated anew, will be very valuable under the conditions of large cities located outside of river arteries.

We are hearing more and more today about sanitary protection of the countryside. We have learned to protect large rivers, but we are losing sight of the capillaries of life itself--the thousands and thousands of small rivers and rivulets with their endless springs and sources. But meanwhile the fate of these grandparents of the water directly depends on their reliable sanitary protection.

The medical institute's department of municipal hygiene is one of the pioneers in local and small-scale sewage systems. The significance of this is extremely great. This is a matter of providing sewers for individually standing objects and small population centers (villages,

summer home settlements, camping grounds and so on) with the use of compact factory-manufactured units, and also facilities for underground filtration, where soil methods of purification of domestic waste waters are used.

Now in fact the competition of different types of purification is arising. And this work is unthinkable without the very close cooperation of specialists of different types, without the fusion of medical-hygiene and engineering thought. For many years now this joint quest has united our collective with the scientific research and design institute of the municipal economy of the Ministry of Housing and Municipal Services of the Ukrainian SSR, with a number of academy and sector scientific institutions of the republic and the country. This makes it possible to increase the scope of such work.

The activity of hygienists, microbiologists, health physicians and engineers usually is not visible. But, by improving and protecting nature they are working for the good of society, they are actually the healers of millions. This especially concerns the protection of the basis of life--water.

10908
CSO: 5000

BELORUSSIAN RIVER POLLUTION

Minsk ZVYAZDA in Belorussian 15 Nov 79 p 4

[Article: "We Shall Keep the Rivers Clean"]

[Text] An editorial under the above title, dealing with protection of water resources, which appeared in the 25 August issue of ZVYAZDA, contained critical facts pertaining to pollution of this republic's lakes and rivers. In particular it related incidents of fish kills in the Plisa River in Borisovskiy Rayon and poor maintenance of water levels and water quality in small rivers. The editors evoked a response from the Borisov City Soviet, the Minskaya Oblast Environmental Protection Inspection, and the Belorussian SSR State Committee for Environmental Protection, which acknowledged that these incidents indeed had taken place.

We are informed by N. Filipau, Chairman of the Borisov City Executive Committee, that in order to prevent future pollution of the Plisa and Berezina, temporary screens have been placed on the sewer main to trap petroleum waste products. These devices are cleaned daily. The city's sanitation-epidemiological station is monitoring the operations of industrial enterprises which utilize the storm drain sewer main. The executive committee of the city Soviet has requested that the Ministry of Housing and Municipal Services allocate funds for construction of a sewer main with sewage treatment facilities discharging into the Plisa River.

We are informed by deputy chief G. Karpau of the Minskaya Oblast Inspection of the Belorussian SSR State Committee for Environmental Protection, that it has sent to the bank a notice to cancel payment of wage bonuses to the officials of the Borisov City Department of Municipal Services, which has failed to take prompt and effective measures to prevent pollution of the Plisa.

A. Svistunou, deputy chairman of the Belorussian SSR State Committee for Environmental Protection, reports that small rivers in this republic are still in an unsatisfactory condition. At the initiative of the State Committee, a program of environmental protection measures for small rivers has been drafted and submitted for examination by the Interministerial Council on Problems of Land Reclamation of the Belorussian SSR Council of

Ministers. Implementation of this program will help improve management of small rivers, maintaining their water quality and water level.

NEW CATALYTIC PROCESS CLEANS STACK GASES

Minsk ZVYAZDA in Belorussian 28 Oct 79 p 4

[Article by BELTA correspondent I. Padarazhanski: "Money... From Smoke"]

[Text] It has long been known that money sometimes "goes up the chimney" with careless managers. But is it not possible, figuratively speaking, to bring the money back down?

As it turns out, such a reverse process is possible for thrifty people! This was experimentally demonstrated by scientists at the BDU [expansion unknown] imeni V. I. Lenin, who processed into usable product one of the most common and noxious air pollutants, which goes up the chimneys of thermal electric power plants, chemical plants, and a great many boiler facilities.

We are talking about sulfur dioxide, which damages trees and shrubs in the vicinity of industrial plants, is hazardous to people's health, and acidifies soil. Attempts to find efficient methods of "trapping" and recovering this gas are being conducted throughout the world. It is therefore particularly gratifying to state that Soviet researchers have achieved important success in this unique competition, dictated by concern for environmental protection and economic tasks.

A team of Moscow and Minsk scientists has developed a so-called radiation-catalytic stack gas scrubbing method, patented in the United States, Great Britain, the FRG, and France. "The formula for eliminating sulfur dioxide pollution of the atmosphere is quite simple and has long been known," stated one of the authors of this new process, head of the department of radiation chemistry at BDU, Professor Ya. P. Pyatraeu. "One needs to add 'merely' one atom of oxygen to each molecule of sulfur dioxide. This produces sulfuric anhydride, which in solution gives sulfuric acid. But unfortunately sulfur dioxide oxidizes poorly even in the presence of active catalysts. Nor can it be trapped by the most advanced electrostatic precipitators. As a result it comprises up to 0.2% of all pollutants ejected into the atmosphere by thermal electric power plants and certain factories. On a nationwide scale this amounts to millions of rubles going up the chimney in the form of unutilized raw material.

"Fortunately scientists have discovered a way greatly to increase the activity of the most widely-used catalyst -- bivalent manganese. We have succeeded in discovering its capability sharply to accelerate the oxidation of sulfur dioxide when irradiated. Experiments conducted by V. M. Harbachov, a member of our department, under conditions maximally approximating conditions prevailing in industry, have demonstrated that ionizing radiation will make it possible to oxidize sulfur dioxide almost totally."

The people at the Polotsk Oil Refinery were the first to have faith in the new method. This enterprise has decided to install a full-scale experimental radiation-catalytic unit, the basic design of which was developed at BDU. Preliminary calculations indicate that replacement of the old, inferior sulfur dioxide scrubbing method with the new method, in addition to the environmental protective effect, will generate for the plant more than 450,000 rubles profit per year through the additional production of sulfuric acid, into which the sulfur dioxide stack gas is processed.

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CSO: 5000

PLANNING FOR INTERDEPARTMENTAL ECOLOGICAL PROBLEMS

Kishinev SOVETSKAYA MOLDAVIYA in Russian 20 Oct 79 p 2

[Article by candidate of geographical sciences V. Proka, head of the section "Natural Resources and Their Use": "Basis of Nature Use"]

[Text] Today's nature use is based on the results of scientific developments. However, it is practically impossible to implement a large-scale approach to nature conservation, to the use and reproduction of natural resources with the modern forms of managing the economy, on the basis of separate, uncoordinated research. Nature use needs a scientifically based strategy. Its development is possible only through unification of the forces of different specialists and scientific collectives.

The fact that out of 15 intersectorial scientific-technical problems worked on in the republic six of them pertain in one way or another to nature conservation and the use of natural resources speaks for itself.

The six scientific problems pertaining to nature conservation, having in mind their close contact and interdependence, have been reduced to a single section, "natural resources and their use," in accordance with the complex program. The basic scientific concept of this section is the optimization of nature use under the conditions of concentration and specialization of production.

The priority task is the determination, study and purposeful formation of nature management facilities. The fact is that under the conditions of scientific and technical progress it is necessary to regard nature use in close relation with the rates and tendencies of development of economic projects. Take, for instance, the modern city. Everyone is in agreement that for the purpose of creating a favorable ecological environment it is necessary to regard both nature and urban facilities as a whole, as a separate natural-economic object.

Natural-economic objects of the agrosystem type have another specific feature. However their successful operation also depends on the optimum interaction of nature and the economic work load. Agricultural crops can produce the greatest yield if they are placed in the natural conditions that are optimal for them. At the same time the production of stable yields today is unthinkable without the use of mineral fertilizers and pesticides, mechanization, irrigation and so on. All this is an economic load on nature. To what scales is this load permissible? The answer is simple enough. The economic load should not disturb the ecological equilibrium of the large and small natural sectors.

It does not follow, however, to think that by appealing for optimization of nature use we are advancing a one-sided slogan, demanding only to spare nature by limiting economic activity! On the contrary, only wise use of nature can contribute to satisfaction of the demands of the national economy for natural resources and to the preservation of favorable ecological conditions. In other words, there cannot be economy of nature outside of ecology of nature.

What is the essence of the six scientific-technical problems mentioned above? What is their content, their goals?

Singled out as an intersectorial problem first of all is the problem of water resources of Moldavia and their rational utilization. The forces of scientists and planners are concentrated on development of a general scheme of complex use and preservation of the water resources of the Moldavian SSR for an extended period taking into account transfer of part of the runoff of the Danube river into the central regions of the republic. The second problem covers problems of purification of the waters and development of low-waste and internal drainage technologies in industrial and agricultural production.

The use, reproduction and protection of vegetation make up the third problem, which provides for further study of forests, the development of measures for rebuilding stocks of trees and the creation of new forest plantings. Also foreseen is work to designate the rare and disappearing species of plants, and for creation of a living collection for preservation of genetic stocks. The fourth problem includes questions of utilization, reproduction and protection of the animal world.

Mineral raw material and its rational industrial use comprises the content of the fifth problem. It provides for development of methods of complex utilization of non-metal useful minerals, an increase in the mineral raw material potential, and improvement of the prospecting and extraction of useful minerals. Finally, the sixth problem is devoted to the use, protection and increase in the fertility of soils. For the coming years the program provides for the development of a general scheme of utilization of land resources, of methods of development and reclamation of unproductive lands, combatting erosion and landslides, and also the

technology of chemical treatment of the fields and increasing the yield capacity of agricultural crops.

Set up and operating for all these problems are scientific councils, which are made up of scientists, and leading specialists of ministries, planning organizations and institutions of the republic independent of their subordination.

In this way, the conditions have taken shape for solution of the main strategic problem--the forecasting of possible changes in the environment. A program has already been developed and the structure of projects for forecasting the status of the environment on the territory of Moldavia has been determined.

The executors of the six intersectorial problems have determined that it is advisable to work out the forecast in two stages. To be developed in the first stage (1979-1980) is an ecological forecast for the period up to 1990 with simultaneous detailing of it for the period of the 11th Five-Year Plan.

Planned for the second stage (1981-1983) is development of a forecast of the ecological conditions of the surrounding natural environment for the period up to the year 2000 with simultaneous detailing of it for the period of the 12th Five-Year Plan.

The scientific councils for intersectorial problems have completed the planning of scientific research projects for 1980 and are now preparing to sum up the results of the work which has been done.

It has become obvious that the intersectorial scientific and technical problems significantly increase the demands both on scientists and on specialists in sectors of the national economy called upon to insure introduction of the projects and their exploitation.

Experience shows that the planning and detailing of programs of intersectorial problems in the field of nature use must be carried out especially thoroughly. There are good results today in the framework of those problems where businesslike, working inter-relations have been established between the scientific collectives and the specialists of institutions and departments.

Experience has also shown that the detailing and intercoordination of research projects and measures for their incorporation must be carried out not only with respect to the problems, but also between them.

The ministries and departments should participate actively in detailing the programs. This will make it possible to bring the planning of the programs up to a plan-schedule of making them a reality. Finally, there is

one more circumstance--this is a matter of the development of research on the basis of economic contracts. Undoubtedly, the scientific institutions need economic contracts and are ready to conclude them with the production organizations and enterprises. However there are also cases where production organizations of the republic unwarrantedly are concluding economic contracts with scientific institutions of other centers of the country. It seems that needed here is a definite system and the appropriate procedure. Therefore when detailing the working programs regarding the problems an important feature for the ministries and departments is the setting up of funds of money for economic contracts and the planning of them according to the periods of doing the work.

Development of the principles of optimized nature use will make it possible for the planning agencies to include the natural-economic structure as a component of the plan for economic and social development of the republic.

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CSO: 5000

LENINGRAD'S PNEUMATIC GARBAGE REMOVAL DESCRIBED

Leningrad STROITEL'STVO I ARKHITEKTURA LENINGRADA in Russian No 8, Aug 79
pp 20 21

[Article by S.Ye. Bogdanskiy: "Containers Along the Pneumo-system"]

[Text] Removal of garbage from the city. No matter how prosaic a problem, it does exist and it is becoming more acute every year. According to the calculations of statisticians, the amount of domestic wastes to be removed from cities of the country has reached 130 million cubic meters per year and is increasingly constantly by 3-5 percent. Utilized for the removal and hauling of wastes are tens of thousands of trucks, and many workers. In Moscow alone engaged in operations connected with cleaning the city are on the order of 10,000 people, and the majority of them in non-productive manual labor. In addition much noise is made and much critical fuel is expended.

Therefore it is not surprising that seriously engaged in the solution of the given problem are scientific and planning organizations, services in public health, sanitary inspection, and municipal services. Several years ago in Leningrad (in the district of the Gorelovo settlement), a plant for mechanized treatment of domestic wastes was put into operation. Now it utilizes 480,000 cubic meters of garbage per year--one-fourth of the total amount amassed in the city.

The technological cycle at the plant is precisely set up. Using special installations the metal (up to 2200 tons of ferrous metal and 70 tons of non-ferrous per year) is removed from the mass brought in. Then in bio-thermal furnaces the garbage is turned into compost during which leather, rubber, plastic and glass is removed from it. The compost has proven itself to be an excellent fertilizer, able to reduce by 15 days the times for ripening of vegetables and to provide an increase in the yield by 2 kilograms from 1 square meter of hothouse. Every year 80,000 tons of this valuable top dressing is shipped out from the plant.

At the present time the enterprise is being expanded. A pyrolysis shop is being built, where pyrocarbon, readily used as a filler by many sectors of industry, will be manufactured from the components (wood, rubber, leather and so on) separated out in the furnaces. With the introduction of this

shop the production will become fully waste-free. With the launching of the second phase the capacities for output of compost will also increase.

But if the plant is successful, if it manages the utilization of wastes at the most modern level, even then it will not solve the problems connected with removal of garbage from the city. The garbage is brought here in the traditional way, by motor transport. Every day 200 vehicles are occupied with this. But soon, to be precise, at the end of next year, the plant will be able to reject them. Pneumatic transport will come to replace wheeled transport.

A municipal pipeline container pneumatic transport system is under construction. It will extend 11 kilometers from the Predportovaya station, where the garbage reception center is located, up to the village of Gorelovo, to the plant. According to the design this system will be two parallel lines of pipelines 1200 millimeters in diameter each, laid in relation to the terrain and meeting on the path of the facilities--on the surface or underground. The freight will be moved through the pipes in container cars, which move owing to the drop in pressure that is created by blowers installed at the beginning and end of the pneumo-track. The carts are moved loaded along one branch, and they are returned empty along the second. The energy outlays in this case are insignificant--0.5-0.8 kilowatt-hours per ton/kilometer, since a drop of only 0.2 atmosphere is sufficient. The system of container pneumo-transport was developed by the "Transprogress" Special Design Bureau of Glavneftesnab [Main Administration for Transport and Supply of Petroleum and Petroleum Products] of the RSFSR under the RSFSR Council of Ministers.

The construction of this transport line that is unusual for our city was begun a year ago. It was entrusted to the 303rd administration of the Spetsstroy [Special Construction] Trust of Glavleningradinzhstroy. At first glance the laying of the pipelines for the subdivisions of Spetsstroy is an ordinary job, not present especial complications. But erection of water-conduit systems and sewerage collectors is much more simple in technology. Here the administration received an assignment that is close in profile to the work of organizations engaged in the creation of trunk gas pipelines.

The tolerances when joining the pipes are very close, relates the chief of the 303rd administration, M.S. Bukin. For the joining we use centering guides which we borrowed from the gas workers. However they are not very absolute. Now recently from Kiev we received a special unit which makes it possible to accomplish the joining with lower labor outlays and more accurately. The maximum high demands are made on the quality of the welding. We are using special gas-protective electrodes, which produce insignificant floating particles of metal. But even they are carefully cleaned off from the inside by pneumatic machines. The most important feature during installation is observance of the curve of the pipe joints. The geometry of the pipeline over its whole length should be maintained irreproachably. Only then will reliable operation of the line be guaranteed.

Therefore when matching sections on curves we roll by a model simulating a container cart. Every 12 meters we install stiffening ribs, which are to protect the pipeline against deformation in the process of exploitation. Finally, all this is not simple, but the collective approaches the matter creatively, and now already six kilometers of the pipeline pneumatic transport have been erected...

It must be said that the construction was entrusted namely to the 303rd administration not by chance. Here the main machinery service is strong, the welding equipment is in exemplary condition, and there are many skilled electrowelders and experienced machine operators. Manifested even at the first stages of erecting the pipeline was much valuable initiative, thanks to which it became possible to lower the labor-intensiveness of the processes, to achieve a saving of metal. Thus, while at first pipes 11.5 meters long were joined on the line, very soon a site was set up where they began under more convenient conditions to weld three such pipes and supply lengthened units to the place of assembly. The technology of manufacturing segments of the curve was improved under the leadership of the chief mechanic of the administration, S.L. Khristoforov. About 40 tons of metal was saved owing to a change in the design of the support of the above-ground part of the pipeline.

The builders organized efficiently a rather complex operation for crossing the railroad line in the region of the Predportovaya station. According to the plan it was foreseen to accomplish this by the method of making a hole through an embankment. But dangers arose: was it possible in this case to insure the necessary geometry, slope and parallel arrangement of the threads of the pipeline? The Administration of the Oktyabr' Railroad set aside 10 hours of night time for performing the work by the open method. They prepared carefully. A schedule was compiled and they recorded who, what, and how much time was required. They played it out theoretically. All the equipment was duplicated, and uninterrupted communication was insured with the services of the railroad. Precisely on the signal of stoppage of traffic the operations were begun: examination of the roads, digging of trenches, laying of the pipes, then restoration of the railroad bed. They operated with confidence, smoothly and the pipes were laid in 8 hours.

At the present time the total advance over the planned deadlines for building the pneumatic line comes to half a month. Now the hope has arisen to gain more time. The builders read in LENINGRADSKAYA PRAVDA about how in the "Pigment" Scientific-Production Association (NPO) a new composition of ultrastrong enamel has been developed, which when applied to metal structures reliably protects them in the future from possible corrosion. This report could not help but interest the service of the administration. The fact is that it is envisaged by the plan to remove rust from the exterior surface of the pipes using brushes or sand-blasting apparatuses, and then to apply a layer of aluminous paint. This is a labor-consuming process, requiring much time. Recently a small amount of the new primer was received from the "Pigment" Scientific-Production

Association. It is being tried out to ascertain the possibility of using it on the pneumatic transport line.

A combined brigade of machine operators, headed by A.M. Anikin, has worked from the very beginning on building the pipeline of the city container pneumatic line. Now it is working on the approach to the Tallin highway. The collective has taken on socialist pledges according to which before the end of December the threads of the pipeline will extend 2 kilometers beyond the highway. This will be a reliable guarantee that the pneumatic line will begin operation in 1980. This year the assembled part of the system will be tested with air and have a test-run.

The line under construction here is the first step in development of pneumatic transport in Leningrad. Even the introduction of this 11-kilometer pipeline will insure the hauling of 0.5 million cubic meters of domestic wastes per year. Then each container cart, owing to compacting units at the receiving center will pick up the load of a whole truck.

In the future according to the general plan for sanitation of the city, which was compiled on the basis of the complex plan for economic and social development of Leningrad and the oblast, a vacuum system of garbage removal will receive wide dissemination. Units like giant vacuum cleaners will evacuate household wastes from apartment buildings and send them along pipelines to processing plants, which it is proposed to build in different regions of the city. Putting the first line of the container pneumatic transport system into operation is an important link in realization of the compiled plan.

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CSO: 5000

AIR POLLUTION FROM FUEL BURNING DEMANDS SOLUTION

Helsinki HELSINGIN SANOMAT in Finnish 22 Oct 79 p 9

[Article by Seija Sarti: "Expensive and Perplexing Solution to Air Pollution Must Be Made Soon. How Low-Sulfur Oil Can Be Obtained. Sulfur Is Harmful to Health"]

[Text] The solution to obtaining cleaner air is simple: A conversion to fuel oil in which there is less sulfur.

However, it is much more complex to determine how this solution is to be accomplished. Finland cannot buy low-sulfur oil from wherever it would like and in the amounts it would like. The only alternative seems to be to eliminate the sulfur from oil, which is both difficult and expensive.

Some of the biggest environmental arguments of the near future will be over how much we should pay for clean air and from where will the necessary millions come.

Of the sulfur compounds detrimental to the atmosphere a full half comes from the burning of oil -- in more densely populated areas even 90 percent. Thus the most effective means for purifying the air or at least slowing down its pollution is to reduce the amount of sulfur contained in oil.

In all those industrial countries in which attention is being given to air quality an upper limit has already been placed on the sulfur content of fuel oils. The regulations differ according to countries and even within a country, but nearly sulfurless oil is generally used in areas with the worst pollution.

Limits in the Near Future

Olli Ojala, chief of the environmental section of the Ministry of Internal Affairs, considers that limits are also needed here. He says that limits for the sulfur content of fuel oils should be established by 1982.

Director Airi Laijo, who is responsible for environmental issues at the Neste Corporation, does not consider limits to be necessary. Not for the reason

that he supports "the freedom to pollute", but for the reason that Finland's air is so clean that in his opinion it is not worth sacrificing hundreds of millions for reducing what is not a threat to the environment.

Sulfur should primarily be reduced from heavy fuel oils, from which the overwhelming majority of sulfur pollution comes. Airi Laiho calculates that the elimination of sulfur from heavy fuel oils would cost 100-150 markkas per ton or 400-600 million markkas annually.

Olli Ojala, for his part, considers the damage from sulfur to be so great in Finland that it is even worthwhile to eliminate sulfur.

The pro and con discussion of the profitability of eliminating sulfur is made possible by the fact that the evaluations of international experts concerning the detriment of sulfur to man and the environment are summary and fluctuate from one end of the pendulum to the other.

Annual Damages Are a Half Billion

When applied to conditions in Finland, the estimates become more inaccurate. The talk is about millions, but the numbers can mean almost anything. A report compiled by the Ministry of Internal Affairs talks about an annual damage of 500 million.

Olli Ojala states that we should be able to tell the decisionmakers and above all the government that the investing of hundreds of millions into the elimination of sulfur is less expensive than repairing the damages of pollution afterwards.

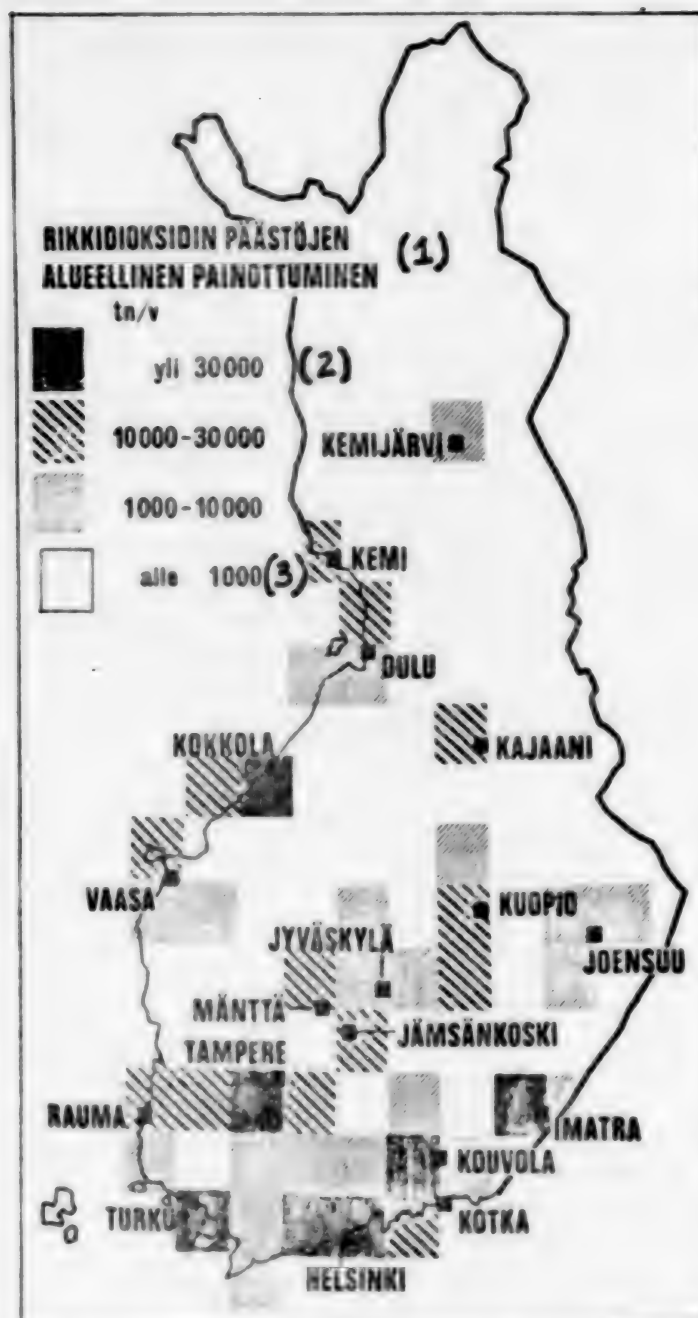
The task for the politicians remains to decide what is worthwhile and what is affordable. Also from their point of view it is not beneficial to assure their constituencies that the price of oil should be considerably increased.

Airi Laiho thinks that the elimination of sulfur would increase the price of heavy fuel oil by 16-25 percent.

For the time being, it would be cheaper to purchase low-sulfur crude oil. Oil with a slight sulfur content is, indeed, more expensive than oil with a high sulfur content, but it is not as expensive as eliminating sulfur and constructing sulfur elimination plants.

Tough Competition for Clean Oil

However, it is difficult to obtain crude oil with a slight sulfur content. All countries in which upper limits have been established for sulfur content are competing for it. Other countries are also attempting to buy it since in addition to clean air clean oil has other advantages.



Of all the sulfur dioxide emissions in Finland three-fourths are located south of a line travelling from Kokkola to Imatra.

Key:

- | | |
|-----------------------------|--------------------------|
| 1. Territorial distribution | 2. More than 30,000 tons |
| of sulfur dioxide emissions | 3. Less than 1,000 tons |

Also the majority of the world's known oil reserves are high in sulfur content so that low-sulfur oil will be even more desirable and, therefore, even more expensive in the future.

At some point the elimination of sulfur begins to be just as worthwhile as the procurement of low-sulfur oil, and finally the elimination of sulfur becomes the only solution if one desires to obtain oil with a low-sulfur content.

In Ojala's opinion in Finland it is realistic to talk about only the possibility of eliminating sulfur rather than to speculate about possible sources of oil with a low-sulfur content.

For the time being, Finland's agreements are rather good from the point of view of the environment; Soviet crude oil which makes up the majority of the oil imported into Finland is rather clean or the average percentage of sulfur in it is 1.5-1.7.

Crude oil which has a sulfur content of less than 1 percent is considered to be low in sulfur. Crude oil sulfur may fluctuate from 0.1 percent all the way up to 5 percent.

Also a certain amount of Finnish oil products which are cleaner than what is refined by Neste are imported from the Soviet Union.

The percentage of sulfur in the heavy fuel oil refined by Neste is 2.4-2.9, 0.6-0.7 in light fuel oil, and 0.2-0.4 percent in diesel oil. The sulfur content of Soviet oil is on the average less than Neste's.

However, in Finland it is not possible to choose oil which is not harmful to the environment since so little of it is imported.

Very little oil with a very low-sulfur content is imported for the reason that it is not available. Generally, crude oil with a low-sulfur content comes from Norway.

On the other hand, the amount of Finnish oil products coming from the Soviet Union is subject to quotas in the trade agreement between Finland and the Soviet Union.

Neste eliminates a portion of the sulfur from the diesel oil and light fuel oil it refines, but it is not able to eliminate it from heavy fuel oil.

Neste's Airi Laiho points out that reduction of the sulfur content to the lowest possible level is also not as amiable to the environment as it sounds.

The elimination of sulfur is a complicated industrial process, which also consumes energy. "The elimination of sulfur from heavy fuel oil is a waste of energy. Approximately 10 percent of that oil from which sulfur is eliminated is consumed for the elimination of sulfur," states Laiho.

Sulfur Amounts on the Increase

Olli Ojala, for his part, does not believe the problem will be essentially reduced as oil becomes more expensive: pretty soon any kind of oil regardless of its sulfur content will be suitable, and also the sulfur content of coal may increase.

In Finland the elimination of sulfur has been opposed also for the reason that a large portion, who knows, perhaps even the greatest portion of sulfur pollution comes from across the border -- primarily from the industrial areas of Central Europe.

As a representative of the authorities Ojala sees this issue in a different light: It is not right for Finland to demand the reduction of sulfur emissions from other countries if it itself has not done anything and does not intend to do anything about this issue.

In the late fall Geneva will play host to a kind of "air pollution-CSCE" in which European countries intend to adopt an agreement for limiting the long-range movement of air pollution. Ojala states that the goals of the agreement are rather modest.

No real improvements can be expected until 15 years from now at the earliest.

Sulfur Pollution Reduces Forest Growth and Kills Fish

Sulfur pollution increases illnesses, reduces harvests and forest growth, kills crabs and fish, damages objects and buildings, and so on.

The list of damages caused by sulfur pollution is already long according to current information, but experts state that not all the detrimental effects are yet known.

A portion of the air's sulfur dioxide changes into sulphates, and according to the researchers there is good reason to suspect that they are even more harmful to human health than sulfur dioxide itself.

It has been established that the increase in the sulfur content of the atmosphere increases such illnesses. It also complicates certain pulmonary and cardiovascular diseases. Typical diseases which are caused or complicated by sulfur dioxide and sulfate particles emanating from it are, among other things, inflammation of the lungs and respiratory paths, expansion of the lungs, and asthma.

When the economic damage caused by sulfur pollution was estimated in a report by the Ministry of Internal Affairs, it was calculated that more than 40 percent of the additional expenditures were caused by diseases.

The cost of sulfur dioxide emissions in health care is estimated to be just as large as if approximately 350 individuals annually became permanently disabled and institutionalized.

When talking about the harm caused to the environment by sulfur compounds, one must mention direct effects which are felt in the area of emission as well as indirect effects which can appear at a distance far away from the emissions and after a long period of time.

The worst effects of the latter are acidic rains and snowfalls which acidify soil and water. The cause is primarily sulfuric acid originating from sulfur dioxide emissions.

"Finland's soil and water systems are naturally quite acidic so that even the slightest changes caused by man can cause lasting or long-term increases in their acidity," fears Olli Ojala, chief of the environmental section of the Ministry of Internal Affairs.

Large Losses From Damage to Coniferous Trees

In Finland the damage caused by sulfur pollution to plants is exceptionally significant since spruce and pine are particularly sensitive to pollution and their tolerance threshold is further weakened by a hard winter.

Air pollution reduces the average life expectancy of trees as well as worsens the condition and growth of a forest. It is estimated that in areas of direct exposure there are 120,000 hectares of forest whose annual losses amount to 10,000-100,000 cubic meters. Perhaps, an area of 10,000 hectares of forest growth is permanently lost.

"A reduction of forest growth need only be a fraction of percentage to be felt by the economy," states Olli Ojala. In a report of the Ministry of Internal Affairs annual losses are estimated to be 50-150 million.

However, Ojala thinks that the direct effect of sulfur pollution on forests is a smaller problem than long-term effects, which are even more detrimental.

"If forest growth comes to a standstill as the acidity of the soil increases, we will soon not be able to do anything about it. The restoration of a balance will take many years."

It has also been confirmed that an increase in acidity hinders the germination and sprouting of coniferous tree seeds.

Pollution also affects the harvests of many grain crops. Barley and oats, clover, peas, timothy, and certain vegetables are sensitive to sulfur dioxide.

An increase in the acidity of water systems gradually destroys plankton. Fish nutrition is reduced and their increase suffers. Heavy metals, such as

mercury, can accumulate in greater amounts. Salmon and crabs are the most sensitive to changes in the acidity of water.

Fish Losses in Neighboring Waters

The destruction by acidity is most apparent in the southern portions of Norway and Sweden, which are within reach of air pollution coming from Western and Central Europe. In Norwegian studies it has been confirmed that more than 1,000 water basins have become devoid of fish within 10 years. In Sweden it has been estimated that the loss of crabs due to acidity is just as great as the loss of crabs due to crayfish disease.

In Finland, for the time being, it has not been observed that the acidity of the water systems have permanently increased, but slight changes, which are considered to be temporary, have been observed.

Of the damage caused to materials by sulfur pollution one of the greatest is metal corrosion. Steel, which is used more than all other metals put together, is overwhelmingly the least resistant to corrosion.

Also air pollution strips materials of paint.

Among the construction materials marble, sandstone, and certain types of concrete wear away even without the effects of sulfur dioxide. Concern has been expressed for valuable monuments and buildings of a cultural value which are subject to premature aging and damage.

Finland's "additional" corrosion expenditures caused by sulfur dioxide have been estimated on the basis of foreign calculations -- indeed, in a rather general manner -- and the conclusion has been reached that they can amount to around 100 million markkas annually.

Helsinki's Air Is Improving

Helsinki is a good example of how one community can fight against sulfur pollution. Even though energy consumption has increased the whole time, the air has become cleaner.

Helsinki has succeeded in concluding beneficial agreements by which it procures low-sulfur oil as well as coal. Remote conducted heat and high smokestacks have contributed to the fact that apartment residents in the city center can enjoy a sulfur-free atmosphere just as those who have "fled" to the suburbs to avoid pollution.

Sulfur dioxide in the air of Helsinki comes primarily from the production of electricity and heat. The effects of industry and traffic is not worth mentioning.

Thus the conversion to remote conducted heat has decisively improved the air in Helsinki.

Remote conducted heat is also beneficial from a local point of view. It is better that there is one large source of pollution than many low smokestacks, which send up clouds of smoke directly over the residents for them to breathe. From high smokestacks the pollution spreads over a large area with the winds and are diluted so that they are no longer dangerous even if not completely without detrimental effects.

Also the smoke from a large plant can be filtered so that it is cleaner than the smoke coming from the heating plants of apartment units.

A Savings of Fuel Also

A centralized power management also protects the environment in such a way that less fuel is used. In Helsinki the annual savings of fuel has been 250,000 tons of heavy fuel oil.

Helsinki has also tried to obtain fuel with the least amount of sulfur. Graduate Engineer Lauri Oksanen of Helsinki's power plant is rather satisfied with current fuels.

The coal obtained from Poland is of a rather good quality, the average percentage of sulfur being only 0.8. Also Helsinki has succeeded in obtaining low sulfur oil so that the sulfur content of the heavy oil used by the city has remained less than 1 percent on the average.

Even If Expensive, It Is Worthwhile

According to Oksanen it is worthwhile for Helsinki to pay more for low-sulfur fuel than a fuel with a high-sulfur content. The city would even use a larger portion of better fuel than at present if it were available.

Offering a more expensive alternative to the small consumer would hardly succeed: "If the resident of a private home can choose whether he should pay more for a fuel which will produce cleaner smoke, there are few who would be ready to pay more. Expenditures for heating are already considered to be too high."

However, the consensus in Helsinki's power plant is that as the area of remote conducted heating is expanded the air will be purified throughout all of the city. In many of the smaller areas of Helsinki the air is now badly polluted since not as much attention has been given to this matter.

Indeed, Helsinki alone cannot do anything about air pollution coming from great distances. It is estimated that in the 1990's half of Helsinki's sulfur pollution will be from other countries.

AUTHORITIES WEIGH PROBLEM OF DANGEROUS WASTES TREATMENT

Helsinki HELSINGIN SANOMAT in Finnish 21 Oct 79 p 19

[Article by Seija Lamberg: "Where Are Poisons Deposited? Problem Wastes Plant Proposed for Southern Finland. Planners Promise to Purify Finland, But Residents Fear for Their Communities"]

[Text] The majority of poisonous wastes and wastes dangerous to health in Finland is currently disposed of in the water systems and dumps.

It is intended that a plant for treating problem wastes to be constructed in Southern Finland will keep Finland free of harmful wastes.

The residents of the communities proposed as the site for such a plant are, however, afraid of the danger of explosions and radiation.

It is feared that the plant will become a giant dumping ground for the whole country.

The people behind this project give a different picture: the plant is safe, odorless, and noiseless and will be of greater benefit than harm to the community.

Public information meetings about this waste treatment plant have been arranged in several communities. At these meetings experts have informed the public about the type of problem wastes and the activities of the plant.

However, for example, the city council in Kerava hastened to make a negative decision even before it was proposed that the plant be situated there.

The national Environmental Protection League and local environmentalists became pitted against each other in the rural area of Porvoo. The former proposed the area be used as a site for the plant since "the area is already a location for industry producing problem wastes". Local environmentalists considered that the waste load in the area is already for this reason sufficient without taking on the rest of the country's wastes. A petition bearing 400 signatures of people opposed to the plant was circulated in the community.

The townships of Hausjarvi, Hyvinkaa, and Riihimaki were suggested as possible sites for the plant. In Riihimaki the situation is two-pronged: whether or not the plant is located there, in any case problem wastes will be transported through the town since it happens to be a railroad junction and one of the most important crossings for the highway system.

Also Orimattila, Parkano, Hanko, and Jarvenpaa have been suggested as sites for the plant.

The plant will be built somewhere in Southern Finland since the largest amount of the country's problem wastes are accumulated from there and since transportation ties in the area are the best.

A Last Minute Solution

A total solution concerning the problem of wastes, in general, and problem wastes is now being developed in Finland. It includes a plant for treating problem wastes, sufficient legislation, guidelines for the accumulation, transporting, and storing of wastes, developmental, counseling, and research work with respect to this issue, and international cooperation.

It is expected that these measures will free Finland of the harm caused by wastes so far and will prevent the creation of waste problems in the future.

It is considered that this total solution is an 11th hour solution. We would have been faced with a catastrophe if solutions and an effective treatment of problem wastes had not been accomplished, states the work group dealing with this matter.

It is believed that the proper treatment of problem wastes will result in a benefit to the economy. The quality of the environment will improve, raw materials will be used more efficiently, energy will be saved, and as a result the need for imports will decrease.

A Decision on Construction Site S-on

The plant for treating problem wastes will be constructed by Oy Suomen Ongelmajäte [Finnish Problem Waste Corporation] which was created as the result of several problem waste studies as well as of a report of the YTV [Capital City Area Cooperative Commission] concerning the question of waste treatment in the capital city area.

The state owns one-third of the company's shares, the second third belongs to the townships through their central organization as well as shares of YTV, and industry owns the remaining third. The company's shares are distributed between 92 different industrial enterprises or associations.

The company's administration will be elected in a week on 29 October. Its first task is to determine the site of the plant as well as begin the centralized storage of problem wastes. It is expected that the first phase of

the problem waste plant, the burning line, will be put into experimental operation already in 1981.

The plant will treat approximately 40,000 tons of various types of problem wastes annually.

It will be built in two phases. The burning line will handle approximately 20,000 tons annually. A 9,400-ton wet chemical treatment line for dispersing inorganic poisonous compounds as well as special dumping facilities would be constructed at the same time. A 10,000-ton oil treatment and solvent distilling line will be constructed in the second phase.

The whole plant is to be in full operation by 1983.

Poisonous and Dangerous

Problem waste was finally defined in a law pertaining to treatment of waste, which went into effect a year ago in August. According to this law problem waste is defined as waste that is especially detrimental to the environment because of its poisonous nature or other qualities.

A decision of the Ministry of Internal Affairs defines waste containing the following substances as problem waste: oil, solvents, corrosive substances such as acid, or waste containing alkali,

waste containing antimony, arsenic, mercury, silver, cadmium, cobalt, chrome, copper, lead, magnesium, nickel, zinc, tellurium, or tin,

waste containing inorganic or organic cyanide or large cyanides,

waste containing organic halogenic compounds such as polychloride biphenyl (PCB),

waste containing phenols, waste containing preventive or protective substances, medical raw materials, medicinal substances or medicinal preparations as well as wastes comparable to the above-mentioned because of other properties or qualities.

Neither radioactive or explosive substances are included among problem wastes. They represent a problem category of their own.

Most Wastes Are from Southern Finland

Approximately 507,990 tons of various types of problem wastes are accumulated annually in Finland. This evaluation was made by a committee established by the Ministry of Internal Affairs in 1974 to deal with problem wastes.

Of this amount 200,480 tons are made up of such wastes that require treatment in special plants.

This figure also includes 87,000 tons of water mixed in various substances. After its elimination 115,480 tons must still be treated by other means.

Some experts consider this amount to be too high. No statistics are kept with respect to amounts of problem wastes so that there is no exact information about their amounts. The work group which prepared the problem waste law of 1978 notes in its report that industrial plants continually contribute to stockpiles of problem wastes about which it is difficult to obtain sufficient information much less determine the amounts of these stockpiles.

According to a 1974 report the majority of problem wastes consists of various types of water containing chemical wastes, approximately 160,000 tons. Oil wastes make up nearly 70,000 tons and solvent wastes 21,250 tons.

More than two-thirds or approximately 70 percent of all problem wastes is accumulated in Southern Finland. Approximately one-fourth of this amount comes from Helsinki and its suburbs. Since industry is located near railroad lines, problem wastes have accumulated near these lines. This information was obtained by SITRA [The Fund For Finland's Independence Anniversary of 1967] and YTV.

Future problem waste plant may appear as above. The drawing outlines the facilities needed for waste treatment lines and other operations. The waste treatment plant will need approximately 5.5 hectares of land.

Key:

- | | |
|-----------------------------|--|
| 1. Burning plant | 8. Reception and supervision |
| 2. Treatment of oils | 9. Storage for raw materials |
| 3. Distillation of solvents | 10. Storage for products |
| 4. Wet chemical treatment | 11. Railroad |
| 5. Waste water purifier | 12. Street |
| 6. Dump | 13. Commercial and industrial buildings on adjacent property |
| 7. Office and laboratory | |

A Monopoly Position for the Plant

In Finland there is a need for only one problem waste treatment plant even though the estimated total amount of wastes is considerably greater -- more than 100,000 tons -- than the planned capacity of the plant, 40,000 tons.

Certain large producers of problem wastes, the wood mass industry and the metal processing industry, among others, continue to take care of the largest portion of their own wastes. However, even the largest of them holds shares in the problem waste corporation. Their plants also produce such wastes which they themselves are not able to treat.

The operations of a problem waste plant is also affected by the manner in which the problem waste law will be written and what criteria will be established for the treatment of problem wastes.

The problem waste treatment plant being planned could in principle be equipped to service all of Finland's needs.

At this time there are two small private solvent and lubricating oil waste treatment plants operating in the country.

The Council of State will be granting a guarantee for the loans to be taken out for the basic investment in the plant, which will cost approximately 55 million markkas.

In addition to this, the plant will acquire a monopoly position. The Ministry of Internal Affairs has promised that the plant will be provided with sufficient operational conditions by law even if in the future similar plants may be established.

No Radiation or Explosives

The new problem waste plant will not be treating all possible wastes. It will not treat radioactive substances, explosive substances, garbage and sewage, hospital wastes (for example, organs), slaughterhouse waste, bark,

and waste gypsum from industrial production. Treatment procedures and regulations already exist for all these above-mentioned types of wastes.

Even though radioactive and explosive substances are not included among the list of wastes to be treated, the problem waste list still includes some very dangerous poisons. People in the townships are afraid that the plant will emit poisonous "emissions" from its smokestacks. It is feared that the accumulation and transfer of certain poisonous substances will cause a danger of explosion. The words "problem wastes" themselves are seen to be so negative that it is difficult to think about the plant in a positive manner.

According to the group supporting this project the plant cannot and will not cause any of those dangers.

Because of its special nature, there is no need to make the plant into a thorn in someone's side, states Assistant Judge Heikki Salo and Graduate Engineer Eero Piimies of YTV.

Existing laws and regulations and the future problem waste law will guarantee the security of the plant. State and local officials will supervise its construction and operation.

Sufficient Knowledge and Skill in Finland

Piimies assures us that all problem substances, inorganic, organic, and biochemical products will be treated safely and completely in the plant.

The plant's burning line will include an oven, the temperature of which can be raised to 1550-1600°. Even viruses will be destroyed in such a heat.

The normal temperature level is, however, approximately 1200-1300° or approximately the same as the temperature used in metal foundries and cement ovens. The boiler will operate as any other stationary thermal plant, at a rather low pressure. It will also include a microprocessor control, by which the possibility of human error will be prevented.

The waste left from the burning line oven will be an ore-type slag, which will not dissolve in water. After it is cooled off it can be stored in a dumping facility. The smoke will be filtered and washed. The smoke will be purified to a degree of 95 percent at which time the content of harmful substances will be less than in the exhaust of diesel engines with an emission control device. The remaining gas will not settle or waste or spread any wastes.

As far as substances to be transported and stored are concerned, Piimies states that the poison content of these substances is significantly smaller than the raw materials and products of a chemical plant, substances which are transported daily by rail and on the highways.

It is estimated that there will be approximately 800 cubic meters of various types of waste daily in the storage area of the plant. The majority of it will be water. The storage area for chemical substances will be small compared to the raw materials storage areas of chemical plants, for example.

Problem wastes will be collected in various storage facilities throughout Finland so that they will not all be in the plant storage area at the same time.

The law also requires that a distance be maintained between various substances during transportation as well as in storage.

The waste consignments must also have clear markings as to their content. Tests are to be conducted before they are treated.

According to Piimies there is sufficient knowledge and professional skill in Finland for constructing and operating the plant. Special vocational training will be given to workers of the plant and people involved in transporting and collecting wastes.

The groups behind this project are prepared to locate other facilities, industrial plants or even housing, near the plant.

The plant will produce thermal energy, which can be directed for use by the township or other industrial plants or facilities.

The treatment, transporting, and collection of problem wastes will also provide several dozen new jobs.

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GREECE

MEASURES FOR WASTE WATER TREATMENT ANNOUNCED

Athens TO VIMA in Greek 28 Nov 79 p 9

[Text] All those industrial plants which are located in the area between Sounion and Korinthos and which are discharging their wastes into the Saronikos Gulf, and all industries which are located to the north and south of the Evvoikos Gulf, are obligated to install biological purification equipment for their waste water prior to 1980.

Following a recommendation by the Ministry of Industry, the relevant decision was made by the nomarchs of the above regions; this decision is to be published next week in the EFIMERIS TIS KYVERNISEOS [Official Gazette].

By this decision, the specifications ("standards") are established for the manner in which the industries must dispose of their waste water. Violators will be punished with a monetary fine of up to 200,000 drachmas, and also with the closing of their industrial outfits.

In more detail, the joint nomarchy decision stipulates the "standards" for those industrial outfits which are discharging their waste water into the drain pipes of the OAP [Capital Area Drainage Organization] and into open streams, as well as for those industries which are draining their wastes directly into the Saronikos Gulf (between Korinthos and Sounion).

According to calculations made by the Ministry of Industry, about 100 heavy industries are located in the above area which are discharging their wastes into the Saronikos. These industries are emptying into the once blue sea some 30 percent of the wastes which the Saronikos receives each day. The remainder (70 percent) of the wastes which are poured out into the Saronikos comes from hotel establishments, amusement centers, and so forth.

The specifications for treating such wastes will be recorded on the operating licenses of the industrial outfits, and both the verifying and the policing will be done by the technical services of the nomarchies.

Operating licenses will not be renewed by the Ministry of Industry if the industrial units in question do not have biological purification equipment.

The principal polluting liquids which the industries are dumping into the Saronikos are heavy metals (in liquid form), acids, solvents, and other toxic liquids, and the authorities of the ministry calculate that by means of this measure, pollution will be reduced by at least 30 percent.

It is worth noting that at various times in the past, the Ministry of Industry had imposed considerable fines on industries which were polluting the atmosphere. On the basis of the law "concerning conditions of operation of factories," many industries were obligated to pay from 100,000 to 200,000 drachmas in fines because of their polluting of the sea and atmosphere. But many factories considered this measure to be unconstitutional and appealed to tax courts, where they succeeded in getting the fine which they had paid returned to them. But with this new law, the factories will not be able to plead the unconstitutionality of the law.

But the problem still remains, because the industrial outfits will continue to discharge their wastes into the Saronikos, regardless of whether or not they have biological purification equipment. Because it has been confirmed that many factories have such equipment, but very few of such devices are in operation. The only solution is to construct a main drainage pipe for disposing of wastes, which will include a biological treatment system for all the wastes of all the industrial outfits. Even though dozens of areas have been proposed for the setting up of such a station, nevertheless no ministry has gone ahead with its construction.

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REGIONAL EFFORTS AGAINST WATER POLLUTION DESCRIBED

Ligurian Region

Rome L'UNITA in Italian 30 Nov 79 p 10

[Article: "Total Decontamination in Liguria"]

[Text] Once vested with full powers, the region worked out and is now putting into practice its first plan for action. From the Gulf of Spezia to the inland water supply.... Research and initial financing.

There is widespread awareness these days that careful stewardship of the environment not only does not conflict with sound economic development, but that -- on the contrary -- without it economic development itself is imperilled because of irreversible deterioration in natural resources. The new way of looking at development is based squarely and solely on this: evaluation of its impact on the quality of life of every one of us. The world of private enterprise, too, is beginning to realize this. The so-called "profit motive" turns out to be only a partial and imperfect approach to bookkeeping, and one which has already been scrapped by the more forward-looking entrepreneurs, who are setting aside significant slices of their investment funds for environmental protection purposes.

Yet another specious conflict of interest which we can safely say is no longer taken seriously is that between the worker in the plant and the same worker outside it. We have come a long way, on the one hand, from selfish, sector-oriented, separatist views and, on the other, from preconceived positions in favor of an impossible and unrealistic return to an imaginary state of nature.

In this context we clearly see the emerging necessity for an overall, all-inclusive view of the environmental issue. Without it -- and this

cannot be over-emphasized -- there is no way to step in and halt the headlong degradation of the environment. Such a global view, in practical terms, means careful planning.

This is now possible, now that the whole matter has been turned over to the regions. The region now becomes the vital center and the reference point for all environmental planning, for all the regulatory and financial tools designed for careful stewardship of the environment in its principal aspects: water, air, and soil.

To this end, beginning with its establishment in February 1979, the Ligurian Regional Environmental Council has pursued a planning policy for the entire problem; first of all, it drafted a bill that takes into consideration all the aspects of the problem hitherto considered separately. We can and we must achieve uniform conditions throughout the region for protecting the environment and along with it the quality of life for every citizen, wherever he may live.

Thus far, for example, air pollution standards were enforced in Pontedecimo, but not in Campomorone; in Cairo Montenotte, but not in Censio; at La Spezia, but not at Arcola.

This same global approach to the regulatory structure led to the appointment of a committee made up of the most highly qualified experts from the region and the university on all scientific elements involved in the environmental problem. This committee will be an extremely high-level and very flexible body which will make possible unimpeachable technical intervention by the region or by local governments as part of a rigorous assessment of the environmental impact of every human activity.

A necessary precondition for any action is solid knowledge of the actual state of affairs where action is desired; to this end, a sampling and monitoring system for the air quality throughout the region has been set up. The system, composed of meteorological and chemical sampling stations, will provide the region with a constantly current map, updated every half hour, of pollution conditions anywhere in Liguria, and will make it possible to intervene immediately wherever there may be situations spotted that could constitute a threat to public health and damage to property.

Daily Pollution Bulletins

The same system will make it possible to forecast, on the basis of mathematical models, the spread of pollution, and hence to adopt medium- and long-term preventive measures.

We might even get so far as to produce a daily pollution alert bulletin for broadcast to the population.

The financial commitment required for establishing this monitoring system is considerable and -- it must be said -- the technical difficulties stemming from the peculiarities of our region's very uneven terrain and from the vagaries of our weather are not easy to resolve.

Still in this global planning approach to the issue, we have run into actions undertaken under the Merli Act. We have decided to move ahead realistically, developing our planning in successive phases, each one surrounded by specific criteria for priorities.

The region's first action will come in the zones singled out as homogeneous environments with high concentrations of population and industry, and hence most exposed to pollution.

For these priority areas in the regional water-cleanup plan (which, let it not be forgotten, should also lead to better availability of water resources and do away with our present all-too-frequent breakdowns in drinking-water distribution), there will be four main targets for intervention: aqueducts, sewer systems, water treatment plants, and urban and industrial solid wastes, including sludges from water treatment plants and industry.

Action Plan: the Map and the Timing

The plan, which will be ready before the end of December this year, includes:

1. a survey of the current situation;
2. an assessment of the continuing growth in water demand;
3. determination of the quantity of urban and industrial waste water and solid wastes reaching the water supply;
4. survey of still untapped water resources available from current sources of supply and from possible new sources;
5. definition of the optimal potentials for water supplies and of better water sharing arrangements;
6. mapping and classification of interurban sewer utilities;
7. locating and classifying water treatment plants according to type, with particular regard to the quality of plant effluent, in relation both to the body of water into which it flows and to the possibility of reutilization of such water;
8. locating and site descriptions of solid waste treatment plants and their classification by type, with particular regard to the surrounding community and to combined disposal of sludges and solid wastes.

This plan will provide an efficient tool for planning and completing all the work required to restore Liguria to environmental health, as indicated by the current situation and by forecasts of requirements as far ahead as the year 2015. As one can see, what we have here is a massive undertaking which will require our total commitment and mobilization of all available technical and specialized expertise.

Along with this requisite planning activity, and in harmony with it, go the region's financial planning efforts to pay for completion of the aqueducts, sewers, and water treatment plants for which immediate and pressing need has been found. It is indeed clear that planning requirements and the consequent technical time lag cannot and must not cause delays in the implementation of projects needed on an emergency basis.

To this end, the region has granted appropriations to local governments for fiscal years 1978 and 1979 amounting to a total of 30,015,000,000 lire, distributed among the provinces as follows:

Imperia	6,095,000,000
Savona.....	6,903,000,000
Genoa.....	11,525,000,000
La Spezia.....	5,492,000,000

The local governments involved have already let contracts on aqueduct repairs and construction for a total of 6,113,000,000 lire. Outstanding among these is the Roja aqueduct which, when completed, will be capable of putting an end once and for all to the chronic water shortage from the eastern part of Imperia to Andora, work on which is already nearing completion. Now in the contracting stage is additional work on the Roja aqueduct around Sanremo, which will cost a total of 1.7 billion lire, of which 1 billion will be paid for by the region.

Contracts already let for sewer systems and water treatment facilities total 4.895 billion lire, all to be financed by the region. Still in the bidding process are such major projects as restoration of water quality in the Val Polcenera and restoration of the sewer systems in Val Bisogna and Carignano by the city of Genoa, which will cost 5.5 billion lire, all of which will be paid for by the region.

A call for bids has been issued for pollution abatement work in the Gulf of La Spezia. Competitive bids are sought for construction of the modular treatment system, total cost of which is estimated at 1.5 billion lire. Particularly remarkable is the Savonese utility treatment system, which will be not only one of the largest in Europe, but also one of the most sophisticated in design, owing to the technical complexity of the problems requiring solution.

The purification system will be treating pollutants of extremely disparate chemical content, for which there are no ready-made solutions.

Cost of the project is estimated at around 25 billion lire, 6.25 billion of which will be paid directly by the region, to which must be added the indirect costs of any loan guarantees for the utility when it applies for financing to the Deposit and Loan Fund.

In conclusion, it can be said that the tools for the fight against pollution have advanced into the second generation, so to speak, with refinements in intervention strategies and a sounder definition of the goals to be achieved for an overall improvement in the quality of life, which cannot be achieved without an objective awareness of all the factors that can contribute to it.

Piedmont Region

Rome L'UNITA in Italian 30 Nov 79 p 11

[Article by Mario Fonio, Councillor for Environmental Protection of Piedmont Region, "Four Hundred Billions To Clean Up the Water"]

[Text] Piedmont will need 400 billion lire to clean up its water. The 10-year plan gives some idea of vast dimensions of the problems to be solved. Water resources are, in turn, the meeting-point for other aspects of environmental pollution: the state of the forests, waste disposal, air, and radiation.

Piedmont's policy for protecting and purifying the waters in its territory will be applied through implementation of regional statutes 32/1974 and 23/1975, with which the Piedmont Region anticipated similar measures since adopted by the national government. Specifically, under RS 32/1974, as amended by RS 40/1977, the region set up regulations for discharge of all liquid pollutants from factories or plants, providing for severe administrative sanctions against violators.

Under PL 23/1975, as amended by RS 22/1979, however, Piedmont launched the regional water purification plan, coming to grips with the problem of municipal drainage water in the most highly industrialized and urbanized areas of Piedmont.

The water purification plan, which calls for total expenditures of some 400 billion lire over the next 10 years, has already got well under way in the areas of most serious water pollution.

As of now, the region has already granted the Consorzi di Comuni (joint venture groups of municipalities) responsible for the work (consortium-wide sewer systems and water treatment plants) some 80 billion lire.

Furthermore, pursuant to PL 310/1976, Piedmont has passed RS 31, dated 22-6-1977, which regulates above-ground and underground disposal of liquid and sludge municipal and industrial wastes, and calls for formulation of the plan referred to in the legislation, and has approved the structure of rates for collection, treatment, and discharge of effluents.

Water Resources Plan

The Piedmont Region, in order to optimize water use, has developed a regional plan for water resources, whose purpose is to ascertain the possibility of satisfying the water resource requirements for reaching the objectives of the regional development plan. In other words, the water plan constitutes a check on the compatibility between socio-economic development goals and natural resources, and provides information that will help to meet the following needs:

- a. assurance that water quality is always fit for the use for which it is provided;
- b. adequate and sufficient supplies of surface or ground water for drinking, and for agricultural and industrial purposes;
- c. adequate availability of water for energy production, when water can contribute profitably to meeting the growing need for electricity and when such utilization will not harm the area involved;
- d. adequate availability of water for recreational use, for the protection of fisheries, and for protection of the landscape and of the environment in general.

The full text of the plan is now being printed.

Water, Soil, and Forest Plan

Under RS 54/1975, which accepts total regional responsibility for water and forest resource regulation, there is a procedure laid down for regional action so as to achieve:

- a. emergency conservation and maintenance action;
- b. protective action in specific situations which may be subject to untoward developments;
- c. area-wide actions; all included in annual programs formulated on an overall basis for an entire river basin or watershed.

Under the waters and forests plan special emphasis was laid on preliminary drafting of river basin plans aimed at overall stabilization of soils throughout an entire basin, from the source to the mouth of the watercourse.

These are to be considered genuine economic plans spread over time, and making proper allowance for available financial resources.

As a part of this policy, basin-wide plans have already been made for the Dora Riparia, the Sesia, and the Tocca, while plans for the Scrivia-Cornonia and Bormida basin are nearing completion, and other plans for harder-hit basins are about to be undertaken.

All such intervention will be undertaken either directly by the region or indirectly by grants to the Mountain Communities and the provinces, but in every instance the region will pick up the whole tab.

More than 26 billion lire were paid out in the 1975-1979 period; most of those projects have either been completed or are nearing completion.

Solid Waste Disposal

The overall aim of the program is to provide the region with facilities for supervised disposal or dumping of solid wastes of municipal or industrial origin, by means of the organization of jointly sponsored systems for collection and processing.

Implementation of the project is taking place according to the directives laid down in the regional solid waste disposal plan approved by the regional council on 11 December 1975, which calls for 28 disposal areas corresponding to an equal number of jointly operated treatment plants.

At the operational level there is already one incineration plant on line, and work on three recycling facilities (in the Cuneo, Pinerolo, and Novara sanitary districts) is nearing completion. Investments for all these improvements run on the order of more than 8 billion lire.

Also in operation or just about to be so are a good many local dumping and disposal sites which have cost more than 3 billion lire.

Reckoning on the basis of the last 3 years' experience, the plan for the 1979-1981 period is to assign priority to supervised waste disposal facilities with an appropriation of at least another 3 billion lire.

The regional law passed on 4 June 1975 (RS 46) was amended by RS 28, passed on 5 June 1975, which calls for payments to consortia among local governments for the transport of solid wastes, thus rounding out the waste disposal program.

Controlling Air Pollution

Piedmont's plan is developing along a twofold line of action:

- a. direct action toward pollution sources;
- b. a regional program to beef up air pollution control services and installation and operation of a regional network of sampling stations to keep tabs on pollutant concentrations.

To these ends, Piedmont is speeding up redesign and upgrading of existing industrial installations under the terms of PL 615, passed in 1966, which provides for such action, using constant pressure from the Piedmont Regional Committee Against Air Pollution (CRIAP), whose offices are in

regional headquarters. Additionally, under RS 52, passed on 21 August, 1978, we are moving on feasibility studies for setting up and operating a regional system for monitoring and analyzing air quality and pollution.

Noise Pollution and Radiation Protection

The region has undertaken to draft legislation covering noise pollution and radiation protection.

To this end, it has already sponsored studies and surveys in the sector and is working on contracts for the work with specialized institutes.

Protecting the Natural Environment

On the basis of several years' experience in environmental protection acquired in implementing RS 24/1974 on protection of plant life, the region is now proceeding to implement the newly approved RS 68/1978, "Regulations for the Protection of Our Natural Heritage and for the Appearance of the Environment."

This statute extends its coverage of plant life to funghi, to forest floor products, and to small animals, protecting ecosystems in their entirety, identifying within those systems the animal and vegetable species most endangered by improper and arbitrary exploitation of our natural heritage.

In the spirit of this statute we have begun a program of education and consciousness-raising, with particular attention to school children.

Financing has started to flow for "ecological" areas specially equipped for group tours, while we are still working with the other local governments on offering training courses for volunteer ecological guards.

Emilia-Romagna Region

Rome L'UNITA in Italian 30 Nov 79 p 13

[Article by Lidia Greci, Councillor for Environmental and Industrial Hygiene: "From Potteries to Slaughterhouses, It's a Big Job for the Merli Act"]

[Text] In the controversy over the fate of the Merli Act it has been argued-- by those who have an interest in gutting it and of those who would dodge the real responsibility -- that of the government -- for the whole issue, that the Merli Act has become a dead letter and that the responsibility for its implementation lies solely with local governments.

The truth of the matter, however, is somewhat different from what these people would have us believe. We shall try to prove this on the basis of our experience, of what we -- as the provincial administration of Reggio Emilia -- have done with the Merli Act over the past 3 years.

Since the day it was passed, in Aug of 1976, we have frankly faced up to the severe limitations that marred PL 319: the lack of financing, the

limitations on the very idea of attracting new industry (designed to exclude from the regulations any cattle-raising or farming enterprise, no matter what its size), the frequent inadequacy of regulations which set out with determination not merely to stop water pollution, but to pursue a consistent policy of protection and planned management of water resources. And yet, in spite of all this, we started fighting to apply the law on day one.

A Lot of People Moved

Spurred by the impetus of the Emilia-Romagna Region -- an action of organizational incentives and of genuine integrative legislative work (expansion of the concept of productive installation to include poultry and stock-raising operations and certain farm product marketing and processing plants; the imposition of intermediate deadlines which governed the pace of implementation of the PL 319 regulations; the stipulation of general criteria for planning linked with water protection) -- we, then just a lowly provincial administration, immediately set about the process of involving other local governments on an active basis, reaching out at the same time to craft associations, to the unions, to workers, and to ordinary citizens. In this way we started a broad movement of interested parties and of consciousness-raising on the part of the affected agencies and individuals, and of the general public, around the issues involved in the new law: submission of petitions for dumping permits grew to epidemic proportions (more than 3,000 petitions and applications were submitted to the provincial offices alone), each of them accompanied by thorough documentation as to the quality and quantity of the expected wastes.

Immediately after that, there was a phase of intensive capillary inquiry at the various operations, which enabled us to inspect production processes and technological cycles and to work out practical proposals rooted in these basic objectives:

- a. adoption over a period of time of installation of reclamation facilities in stipulated phases (submission of executive plans and actual projects, prospectuses for construction of buildings and for startup of installations) with guarantees of compliance for waste disposal and discharges with the acceptability limits set by the Region and by the Act;
- b. drastic cutbacks in subsoil destabilization through more rational use and maximum reutilization of water resources (installation of meters on wells, recycling plants, modifications in production cycles);
- c. treatment of productive reutilization of residual sludges from water treatment processes or processing;
- d. assigning priority to recovery and reuse of wastes over their mere destruction, and to conditioning (liquid wastes from pig farms destined for agricultural soils upon issuance of disposal plans; blood residues

from slaughterhouses; sludges from potteries, etc...);

e. practical measures for avoiding any worsening in the existing features of wastes (to avoid activation of further dumping, production increases not accompanied by adequate reclamation practices, shutdowns or improper operation of existing installations) and control over emergency or seasonal dumping. There are data which tell us that here people have been working to implement the Merli Act, and that all this has produced substantial changes in the status quo ante.

One need only look at the fact that more than 90 percent of the ceramics plants in the province (most importantly the 110 or so which produce enameled tiles, and whose wastes contain heavy metals) have already installed or are in the process of installing waste separation devices. As for the pig farms, better than 50 percent of the industrial-scale installations (those handling 4,000 to 10,000 head) have now opted to sell their liquid wastes for use as agricultural fertilizer.

Meat Can Pollute, Too

An equally satisfactory situation is to be found in other sectors. In meat processing, we have suggested, and in many cases obtained -- in addition to installation of biological waste processing installations -- substantial modifications in the production process, with selective collection of blood and organic scrap and their dispatch to companies specializing in this kind of byproduct processing. Similarly, egg processors and canneries are moving toward improvements in their production processes.

It must be admitted, however, that there are still problems, some involving whole sectors and others concerning only one plant, in which the anti-pollution objectives are more difficult and less substantial. And it must also be admitted that there is a problem in assuring a truly broad commitment to vigilance and control which views as active partners not only local, but also involves the workers (here we are thinking of the positive role already being played by factory councils in the ceramics industry in the area of air pollution) and the citizens in all their groups and societies, getting them to maintain constant, minute control so as to prevent and stop instances of environmental pollution and contamination.

Also on the table is the whole issue of disposal and reutilization of residues and sludges from processing and production cycles: some meaningful solutions have already been outlined, all of which, however, call for a commitment and mobilization of resources (in both research and experimentation) on the part of private individuals and public agencies alike.

We believe, however, that the helpful aspects of our experience that are worth looking at here lie elsewhere. We have been working for years now

on a number of inquiries which will give us solid knowledge of the regional environment, the only basis for planning any changes. In the process we have profitably involved experts from other local and government agencies, from the university institutes, and from professional organizations. Even before passage of the Merli Act, we had completed preliminary surveys of the provincial river basins, on the water tables, on the distribution and qualitative adequacy of public and private wells, and on the use of surface water for irrigation.

What we had was a priceless data bank for pinpoint accuracy in applying PL 319. Nor was that all: all this information turned out to be basic to the success of one specific programming initiative by the local agency: programs for getting the sewer systems working (which were an integral part of the water reclamation and purification plan which the Emilia Romagna Region was the only one to submit regularly); comprehensive plans for mapping and classification of the zones where combined fertilization and irrigation with use of pigfarm runoff would be permitted; and basic theory for future river-basin management policy and planning.

We are also working steadily and making progress on other significant projects:

1. already completed is the inventory (called for under PL 319) of all waste pollutant discharge sources in the province, with preparation of a specific, detailed map, and feeding the relevant data into the computer;
2. well on its way to completion is an inventory of all privately owned wells (some 2,500 of them), with invaluable help from the Civil Engineering Office;
3. we are embarking on a qualitative survey of the characteristics of surface waters.

It is on the basis of this overall body of data and planning steps that the province reached the decision to appropriate around a billion lire for the 1979-1981 period to help pay for top-priority water sanitation projects, particularly in the mountain zones; that decision has been backed by the massive financial effort of the Emilia-Romagna Region -- more than 80 billion lire spread over the 1978-1981 period, about 9 billion lire of which is earmarked for the Reggio Emilia province.

A 10-Year Job

Although considerations of political timing have led us to speak at some length about what we have been doing in the sector of water pollution, we must not, in conclusion, pass over some data and remarks about what we have accomplished in the field of occupational medicine, air pollution abatement, and protecting the wholesomeness (in all its many aspects) of our food supply.

Historically, more than 10 years ago, it was occupational medicine, with our inspection program of the indoor and outdoor environment at the potteries and tile factories (of which there are 138 in the province) that first demonstrated our commitment to and our practice of prevention.

We have come a long way since then, and accomplished some truly creditable things, partly thanks to the publicity given our prevention experience through the establishment of the Socio-Sanitary Consortiums, to the crucial commitment of the workers and the union, and to the positive response of a majority of plant owners.

It is certain that inside the pottery works, for example, we have achieved a two-thirds reduction in incidence of lead poisoning; that the work environment has in many cases been improved -- even though a lot still remains to be done -- by looking more deeply into the relation between the environment and job structures. It is equally certain that PL 615 found a fertile field for application in the ceramics field: every one of our plants has installed dust abatement equipment; a considerable number of plants have already acquired, or are in the process of acquiring equipment that removes fumes from the air.

So it is not mere chance that the data on dust pollution of the atmosphere -- as compiled by the monitoring system installed in 1977, and which the plants themselves helped to pay for -- are showing steady improvement in air quality, or that at the same time there is improvement in the contamination levels of food produced in the zone. Obviously, what we have here is no minor achievement, if one remembers the concern and the certainly justified alarm occasioned several years ago by the steady environmental deterioration occasioned by ceramics plants.

As you can see, it is indeed possible to turn downward trends around, to provide genuine stewardship of the environment and restore it to health: all it takes is the political will, available means, and adequate structures, raising the consciousness of workers and citizens, and involving the whole of society. This is the road we intend to keep following, just as tenaciously as when we struck out on it.

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CONCERN OVER PROLIFERATION OF ALGAE IN ADRIATIC COASTAL WATERS

Rome L'UNITA in Italian 30 Nov 79 p 12

[Article by Gianni Buozzi]

[Text] Algal proliferation, which occurred in May and September, was repeated to a lesser extent, but there is still cause for alarm. Scientific institutions have intervened on behalf of Emilia Romagna Region to determine the causes and take steps to resolve the problem at its roots.

Again this year there have been excessive proliferations of algae in the Adriatic Sea. It is a question of algal blooms, as researchers call them, with resultant death among the fish and shellfish. The first heavy growth occurred in May and the last in September, with a maximum density of 96.16 mg per cubic meter of chlorophyll and 28 million cells per liter. However, in the last analysis, eutrophization or lack of oxygen was greatly reduced this year and did not harm the tourist season, which was one of the best in the last two 5-year periods. However, the situation in the sea is not changing. "It is still serious and we cannot hope for a spontaneous positive change," Regional Assessor Giancarlo Bolocchi said. "The condition of the waterways remains precarious, serious in some instances. Nitrogen and phosphorus in particular are still the principal substances of the 'explosions' in the sea."

How do we handle the situation? "There must be a constant effort made by the health inspection department and scheduled operations aimed at cleaning up the coastal environment. First of all, we need a political commitment. Each of us must live up to his own responsibility." An inspection has been made. This year alone there have been 27 analyses of "emergency situations" (maximum growth of algae). In these cases a plan for special monitoring is contemplated in addition to those of a routine nature, to end after a certain time. Let us speak more clearly: the first of these plans was studied with the aim of keeping an eye on sanitation aspects and covers negative features of the phenomenon during the summer season; the second was designed to furnish statistics and information to the research program which has been going on for years even using a motor launch with workers of the university laboratory of Cesenatico on board.

Let us return with Comrade Boiocchi to this year's situation. The dense breeding places in the extensive section which goes from the Lido of Spina to Rimini were not filled with toxic algae. Inspections made of these spots have confirmed this. However, there is still the problem of flowering parts which kill fish and shellfish by depriving them of oxygen and which continue to be a threat to the "desirability" of bathing. "Laboratory analyses have revealed cells of phytoplankton, typical of fresh-water environments. It is a situation favored by abundant flood residue."

It is true that for some years this region has taken the problem seriously and is tackling it with all its limited capabilities and means. The results--also quite positive--are not lacking and are given the headings: "surveillance plan" and "research program," in which, in addition to the local organizations for environmental control, "units" of the CNR [National Research Council] and university participate, directly intervening in hygienic and environmental projects carried on by the region and local institutions.

What, precisely, is the first plan? "It serves to verify the possible poisonous quality of algae in coastal waters and brings to light anomalous situations in algal blooms. In the affirmative case, it makes it possible to take the necessary steps to remove the algae and dead fish and shellfish. A regional "directive" has left it up to the communes, provinces, social and health associations, port authorities, travel agencies and fishing cooperatives to take coordinated and efficient action."

How has it been possible to carry out the research program? "In the past we have empowered the provincial laboratories of hygiene and preventive treatment. Together with the civil engineering offices these organizations are still the principal instrument in the control of waterways. Both have developed an outstanding program which has served, among other things, to assess the amount of foreign agents in the water, as required by the Merli Law." Their work, together with that resulting from the collaboration of the university and CNR, will permit us to go from the "emergency phase" to one of "routine"; to satisfy the objectives of the Merli Law with suitable personnel and structures. In this regard, the region, university, local institutions and their laboratories, civil engineering offices and the Land Reclamation and Hydraulic Resources Agencies (joint regional-ENI [National Hydrocarbons Agency] company for hydraulic resources) are carrying on a joint consultation to devise a plan for the qualitative and quantitative control of the waterways and for the acquisition of instruments, fixed and mobile (gauges and the like) for investigating the causes of the lack of oxygen. "We know very well," Boiocchi says, "that even the most positive and noteworthy results obtained up to now are still insufficient. In fact, the problem of lack of oxygen, due to its extensive nature, requires action far beyond our regional confines. It should be action capable of reversing the trend in order to pass finally from the perception phase to one, gradual but continuous, of reclamation. Only in this manner shall we be able to combat the evil of the Adriatic."

Meanwhile, this is a responsibility--serious, concrete and immediate--of the central government on the general subject of environmental reclamation and the specific subject of lack of oxygen. Instead, what has happened up to now? Even positive "innovations" of recent date, such as the CNR's national convention, the conclusive document of the National Commission on Eutrophization, the Merli Law even with its shortcomings, conjectures of a plan for the Po basin, and a rehashing of the subject of the reclamation of the Adriatic linked with the Treaty of Osimo, have not resulted in any political and financial commitments. "We shall not tire of reproposing the problem. There will be a new occasion at the time of the presentation to Parliament of our regional bill aimed at lowering the percentage of phosphorus in the cleansing agents." In some provinces of Emilia Romagna--Ferrara, Ravenna and Forli--they have already been selling detergents with less phosphorus for years due to an agreement signed by the region and the manufacturers. It is now intended to extend the bill to one of regional scope to be proposed to the National Parliament, therefore to the country as a whole to reduce the discharge of chemical substances which contribute to the proliferation of algae and the death of fish and shellfish in enormous quantities. This is one effort among others being made by the region and local institutions to give continuity and meaning to our commitment to clean up the Adriatic but which must find broader and more coherent support by the central government and all the regions of the Adriatic Coast.

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